2021 Annual Groundwater Monitoring and Corrective Action Report AVS CCR Landfill

Antelope Valley Station
Beulah, North Dakota

Basin Electric Power Cooperative

Basin Electric Power
Cooperative
Bismarck, North Dakota

Quality information

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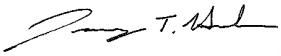			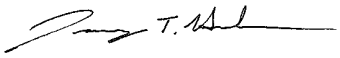
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Table of Contents

Figures

Tables

Attachments

List of Acronyms

AECOM	AECOM Technical Services, Inc.
AVS	Antelope Valley Station
Basin	Basin Electric Power Cooperative
CCR	Coal Combustion Residuals
FGD	flue gas desulfurization
ft amsl	feet above mean sea level
GWPSs	groundwater protection standards
LPL	lower prediction limit
mg/L	milligrams per liter
RCRA	Resource Conservation and Recovery Act
SSI	statistically significant increase
TDS	total dissolved solids
UCL	upper control limit
UPL	upper prediction limit
USEPA	United States Environmental Protection Agency

Executive Summary

This report summarizes groundwater monitoring and corrective action activities completed between January 1 and December 31, 2021 at the Coal Combustion Residuals (CCR) Landfill at Antelope Valley Station, as required by 40 Code of Federal Regulations Section 257.90(e) of the United States Environmental Protection Agency (USEPA) CCR Rule. The location of the CCR unit and program monitoring network for the CCR units, including supporting monitoring wells, are illustrated on **Figures 1** and **2**, respectively. Four landfill expansion wells were added during the reporting period.

Detection-mode groundwater monitoring of the Landfill was initiated in 2018. Detection monitoring through October 2021 identified no statistically significant increases of Appendix III indicators of boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids (TDS) in the downgradient monitoring wells MW-15(S), MW-16(S), MW-17(S), and MW-20(S). Accordingly, the unit remains in detection monitoring into the next year.

Other activities and conditions for the 2021 annual reporting period include:

- Semiannual detection-mode groundwater monitoring events were conducted in May and October. Monitoring involved sampling of two background monitoring wells and four downgradient monitoring wells.
- Four landfill expansion wells were installed and background sample collection began to establish baseline conditions for the wells. Three sampling events were conducted in 2021.
- No well repair or decommissioning of the existing program monitoring networks was conducted.
- No program transitions (Detection to Assessment or vice versa) were triggered.
- No programmatic problems were encountered, so no remedies were required.

Anticipated activities for the next annual reporting period include:

- Completion of two semiannual detection-mode groundwater monitoring events.
- Continued sample collection of landfill expansion wells establishing baseline conditions.
- Statistical evaluation of groundwater data for Appendix III indicators.

1. Introduction

On behalf of Basin Electric Power Cooperative (Basin), AECOM Technical Services, Inc. (AECOM) has prepared the 2021 annual report documenting groundwater monitoring and corrective action for the Coal Combustion Residuals (CCR) Landfill at Basin's Antelope Valley Station (AVS).

Chapter 1 provides background information on the power generating facility, the CCR unit(s) present at the facility, and the physical setting of the CCR unit(s), specifically with regard to groundwater conditions. Chapter 2 summarizes CCR groundwater monitoring activities conducted prior to 2021. Chapter 3 summarizes the groundwater monitoring and corrective action activities completed in 2021, and references attachments to this report that contain detailed documentation of those activities. Chapter 4 provides general information including program transitions, problems encountered, and anticipated activities in 2022. Chapter 5 summarizes the report content. Chapter 6 lists references cited in this report.

Regulatory Background

The CCR rule, effective on October 19, 2015, established standards for the disposal of CCR in landfills and surface impoundments (CCR units). In particular, the rule set forth groundwater monitoring and corrective action requirements for CCR units. The rule includes the requirement for an "annual groundwater monitoring and corrective action report" (annual report), submitted to the operating record annually on or before January 31. The annual report is intended to document the status of the groundwater monitoring and corrective action program for each CCR unit, summarize key actions completed in the previous year, and project key activities for the upcoming year. This report is the fifth annual report, and includes activities performed in calendar year 2021.

Facility Location and Operational History

AVS is a coal-based generating station located north of Beulah, North Dakota (**Figure 1**). The plant consists of two power generating units with a total power output capacity of 900 megawatts:

- Unit 1, with a rating of 450 megawatts, which began operating in 1984; and
- Unit 2, with a rating of 450 megawatts, which began operating in 1986.

CCR produced at AVS includes fly ash, bottom ash, and flue gas desulfurization (FGD) waste.

CCR Unit Description

CCR is disposed of at AVS in the following CCR unit:

- Section 7 Ash Landfill 0160 (CCR Landfill).

The CCR Landfill is located northeast of the generating units and office complex in an area of mine spoils identified as the Coteau Properties Freedom Mine (**Figure 1**). Basin reported that in 2021 the AVS CCR Landfill received approximately 816,042 tons of solid waste, including fly ash, FGD waste, and a minor contribution of solid debris.

Physical Setting

The geology underlying the site includes mine spoils underlain by the Sentinel Butte Formation. This formation is comprised of continental deposits in excess of 1,000-feet thick, consisting of dense clay, weakly cemented sandstone, mudstone, and lignite (coal).

Precipitation supplies surface water to perennial and ephemeral streams that flow generally east toward the Beulah Trench then drain north towards Lake Sakakawea. Groundwater is recharged primarily through regional infiltration of melt water in the spring.

The base of the AVS CCR Landfill is underlain by 115 to 200 feet (approximately) of clay-rich mine spoil that overlies the Lower Sentinel Butte Formation. At the site, the Sentinel Butte is comprised primarily of dense clay with a trace of very fine sand and beds of lignite typically ranging from 6- to 9-feet thick. The 2016 AECOM drilling investigation did not penetrate to depths great enough to expose the lower portions of the Sentinel Butte.

The uppermost aquifer is found within the 6- to 9-foot unmined lignite bed, mapped locally as the Spaer Lignite, located at depths ranging roughly from 180 to 260 feet below ground surface. The elevation of the Spaer Lignite varies across the site by approximately 35 feet from 1,844 feet above mean sea level (ft amsl) at MW-18s to 1,879 ft amsl at MW-23s. The potentiometric surface of the uppermost groundwater present within the Spaer is approximately 1,893 ft amsl in the western portion of the Landfill facility, sloping generally east to ,1880 ft amsl on the eastern side of the Landfill. The hydraulic conductivity measurements for the uppermost aquifer range from $1.65x10^{-4}$ to $2.48x10^{-9}$ centimeters per second.

2. CCR Groundwater Monitoring Activity Prior to 2021

The regulatory process for CCR groundwater monitoring and corrective action is established by 40 Code of Federal Regulations Sections 257.90 through 257.98. The process includes a phased approach to groundwater monitoring, leading (if applicable) to the establishment of groundwater protection standards (GWPSs) for each CCR unit. Exceedances of the GWPSs that are determined to be statistically significant can trigger requirements for additional groundwater characterization and assessment of corrective measures followed by selection of remedy and remedy implementation.

The following paragraphs provide a brief summary of CCR groundwater monitoring activities performed prior to 2021. CCR groundwater monitoring activities performed between January and December 2021 are discussed in Chapter 3.

Groundwater monitoring at AVS is performed using a network of monitoring wells that include both wells to monitor background water quality that is not potentially influenced by the presence of the CCR unit, and wells placed at the downgradient boundary of the unit (**Figure 2**). The hydro-stratigraphic positions of the CCR monitoring wells selected for sampling background and downgradient groundwater quality for the AVS CCR Landfill are summarized below:

CCR unit	Background wells	Downgradient wells
Landfill	MW-18(S), MW-19(S)	MW-15(S), MW-16(S), MW-17(S), MW-20(S)

Monitoring well MW-14(S) is excluded from the groundwater monitoring network due to insufficient water production to obtain a representative sample. However, it remains in place for optional collection of groundwater level measurements for potential inclusion in the potentiometric evaluation of the AVS CCR Landfill.

Baseline monitoring was initiated in August 2016, which involved sampling groundwater for Part 257 Appendix III and Appendix IV constituents over eight baseline detection monitoring events.

Baseline detection monitoring events were performed in general accordance with procedures established in the site-specific Sampling and Analysis Plan (AECOM 2018a), which is included in the facility's Operating Record. The Sampling and Analysis Plan describes the procedures for equipment calibration, monitoring well water level measurement, monitoring well purging and sampling, sample custody, sample shipping, laboratory analysis, and documentation requirements for each groundwater sample submitted. The results of the baseline monitoring and 2018 detection monitoring at the AVS CCR Landfill were presented and discussed in the First and Second Annual Groundwater Monitoring and Corrective Action Reports, respectively (AECOM 2018b, 2019). The AVS CCR Landfill was placed in detection monitoring in the winter of 2018 with the first detection monitoring groundwater sampling event completed in April 2018, then twice annually thereafter. The results of detection monitoring at the AVS CCR Landfill in 2018, 2019, and 2020 were presented and discussed in the Second, Third, and Fourth Annual Groundwater Monitoring and Corrective Action Reports issued on January 31, 2019 (AECOM 2019), January 31, 2020 (AECOM 2020), and January 31, 2021 (AECOM 2021), respectively.

3. CCR Groundwater Monitoring and Corrective Action Activities in 2021

This chapter summarizes the groundwater monitoring and corrective action conducted at the AVS CCR Landfill in 2021 to comply with the groundwater requirements of the CCR rule:

- Groundwater detection monitoring activities:
  - monitoring system evaluation completed in May and October 2021
  - groundwater sampling completed in May and October 2021
  - laboratory analysis of groundwater samples in May and October 2021
  - Statistical analysis of the monitoring results of the groundwater samples in May and October 2021
- Groundwater Corrective Action – Not applicable
- Baseline monitoring of landfill expansion wells completed in May, July, and September 2021

Further details concerning each of these activities, including a brief discussion of work completed during the reporting period are provided below.

Detection Monitoring Activities

Monitoring System Evaluation

As described in the CCR Groundwater Monitoring System Report (AECOM 2017), monitoring wells were installed around the CCR unit at AVS with appropriate total depth and placement of the well screen to: (1) facilitate collection of representative groundwater samples from the uppermost aquifer; and (2) accurately measure water table elevations to support evaluation of groundwater gradient and flow direction. All monitoring wells comprising the AVS CCR Landfill monitoring system were found to be in good condition during the detection monitoring events conducted in May and October 2021.

Potentiometric surface maps constructed using the depth-to-groundwater measurements obtained at the beginning of each detection monitoring event are presented in **Attachment A**. The direction of groundwater flow observed in May and October 2021 was generally east, which is consistent with the direction observed in previous years. Expansion wells to the north of the active landfill cell show a groundwater flow direction to the northeast. The flow direction supports the designation of the wells noted in Section 2 above to represent background groundwater quality and the quality of groundwater downgradient of the unit.

Groundwater Sampling and Analysis

The detection monitoring events completed in 2021 included analysis of collected groundwater samples for the constituents listed in Part 257 Appendix III. The tabulated laboratory analytical results are presented in **Attachment A**, along with potentiometric surface maps for the uppermost aquifer, inferred groundwater flow direction and estimated velocities, and a tabulated summary of field measurements.

Sampling and analysis was performed in general accordance with procedures established in the Sampling and Analysis Plan (AECOM 2018a).

Four monitoring wells were installed in fall of 2020 to evaluate the uppermost aquifer north of the existing landfill in preparation for a planned expansion of the landfill into this area. Expansion wells include MW-21(S), MW-22(S), MW-23(S), and MW-24(S) which were installed between August 17 and November 3, 2020 as outlined in the Coal Combustion Residuals Landfill Site Characterization Reports, Antelope Valley Landfill Lateral Expansion Report (Barr Engineering Company 2021). A copy of the boring log prepared by Barr for each of the four landfill expansion monitoring

wells is provided as **Attachment B**. Baseline groundwater monitoring events for the expansion wells were completed in May, July, and September 2021 that included analysis for the constituents listed in Part 257 Appendix III and Appendix IV. Five further baseline monitoring events are anticipated to be completed in 2022 with the cumulative results presented in the 2022 Annual Groundwater and Corrective Action report set to be issued in January 2023.

Statistical Procedures and Analysis

The cumulative groundwater data collected for Appendix III indicator parameters at the AVS CCR Landfill were evaluated in accordance with the statistical procedures certified on October 17, 2017 (AECOM 2017).

The Appendix III groundwater quality data were evaluated using an interwell approach that statistically compares constituent concentrations at downgradient monitoring wells to those present at background monitoring wells. For the AVS, monitoring wells MW-18(S) and MW-19(S) are designated as background wells because they are located upgradient of the Ash Landfill, whereas the remaining monitoring wells [MW-15(S), MW-16(S), MW-17(S), and MW-20(S)] are located downgradient of the facility.

Prediction limits (i.e., parametric or nonparametric) with retesting were developed for each constituent based on the frequency of non-detect values and whether the background data for that constituent exhibited a normal, lognormal, or nonparametric distribution. For the statistical analysis, non-detect values were represented at the reporting limit. One outlier was identified and removed from the background data (TDS collected from MW-18(S) in June 2020 at 44.0 milligrams per liter [mg/L]). Analytical data from the background monitoring wells collected between July 2016 and October 2020 were used to develop an upper prediction limit (UPL) for all Appendix III constituents, and a lower prediction limit (LPL) for pH, at 95 percent confidence. Data from the downgradient monitoring wells for the same time period were compared to the UPL to identify statistically significant increases (SSIs) over background. Mann-Kendall trend analysis was used to identify statistically significant increasing trends for constituents with SSIs. ProUCL Version 5.1 was used to store the background data and run the statistical analyses. The statistical analysis methods and background UPLs are provided in **Table 1**. The results of the statistical analyses are provided in **Table 2**.

Chloride was evaluated using a control chart. An upper control limit (UCL) was developed as the mean + 4.5 standard deviations using the chloride data for background monitoring wells MW-18(S) and MW-19(S) between July 2016 and October 2020. Starks (1988); USEPA (2009); and American Society of Testing and Materials (2017) suggest using 4.5 standard deviations to develop control limits for groundwater detection monitoring. **Figure 3** is a control chart that shows the background mean (10.72 mg/L), background UCL (33.70 mg/L), and the baseline and detection monitoring results for downgradient compliance wells MW-15(S), MW-16(S), MW-17(S), and MW-20(S) through October 2021. The results depicted on **Figure 3** indicate that chloride does not exceed the UCL at any of the compliance monitoring wells for any sampling event. Therefore, chloride does not currently exhibit an SSI over background at any of the downgradient compliance wells.

The statistical analysis results indicate that none of the Appendix III constituents had SSIs over background or statistically significant increasing trends in constituent concentrations. Based on these results, assessment monitoring is not required at the AVS. Detection monitoring should continue at the site in 2022. . Input data files for calculating the UPLs and LPLs for the AVS landfill are provided in **Attachment C.**

4. General Information

The following subsections summarize any problems encountered in the AVS CCR Landfill program through 2021, any resolutions to those problems, if needed, and upcoming actions planned for 2022.

Program Transitions 2021

There were no groundwater monitoring program transitions for the AVS CCR Landfill monitoring system during the January–December 2021 reporting period.

Problems Encountered

No problems were encountered during the January – December 2021 reporting period.

Actions Planned for 2022

Basin plans on continuing the detection monitoring program for the AVS CCR Landfill in 2022. The detection monitoring program will include semi-annual groundwater sampling events and the required statistical evaluations. Basin plans to continue baseline monitoring of landfill inspection wells followed by statistical evaluation of the wells once baseline sampling is complete. An additional five rounds of sampling are anticipated to complete baseline monitoring.

5. Summary and Conclusions

Basin conducted two rounds of CCR groundwater detection monitoring at the AVS CCR Landfill between January and December 2021. The results were used to establish background groundwater quality for Appendix III constituents in the uppermost aquifer, identify appropriate UPLs and LPLs, and determine whether any Appendix III constituents experienced SSIs downgradient of the CCR unit. The statistical analysis results indicate that none of the Appendix III constituents had SSIs over background or statistically significant increasing trends in constituent concentrations. Based on these results, assessment monitoring is not required at the AVS CCR Landfill. Detection monitoring will continue at the site in 2022.

6. References

AECOM Technical Services, Inc. (AECOM). 2017. CCR Groundwater Monitoring System Report, Antelope Valley Station, Beulah, North Dakota. Basin Electric Power Cooperative. October 2017.

AECOM. 2018a. Sampling and Analysis Plan, CCR Monitoring Program, Antelope Valley Station, Beulah, North Dakota. Basin Electric Power Cooperative. January 2018.

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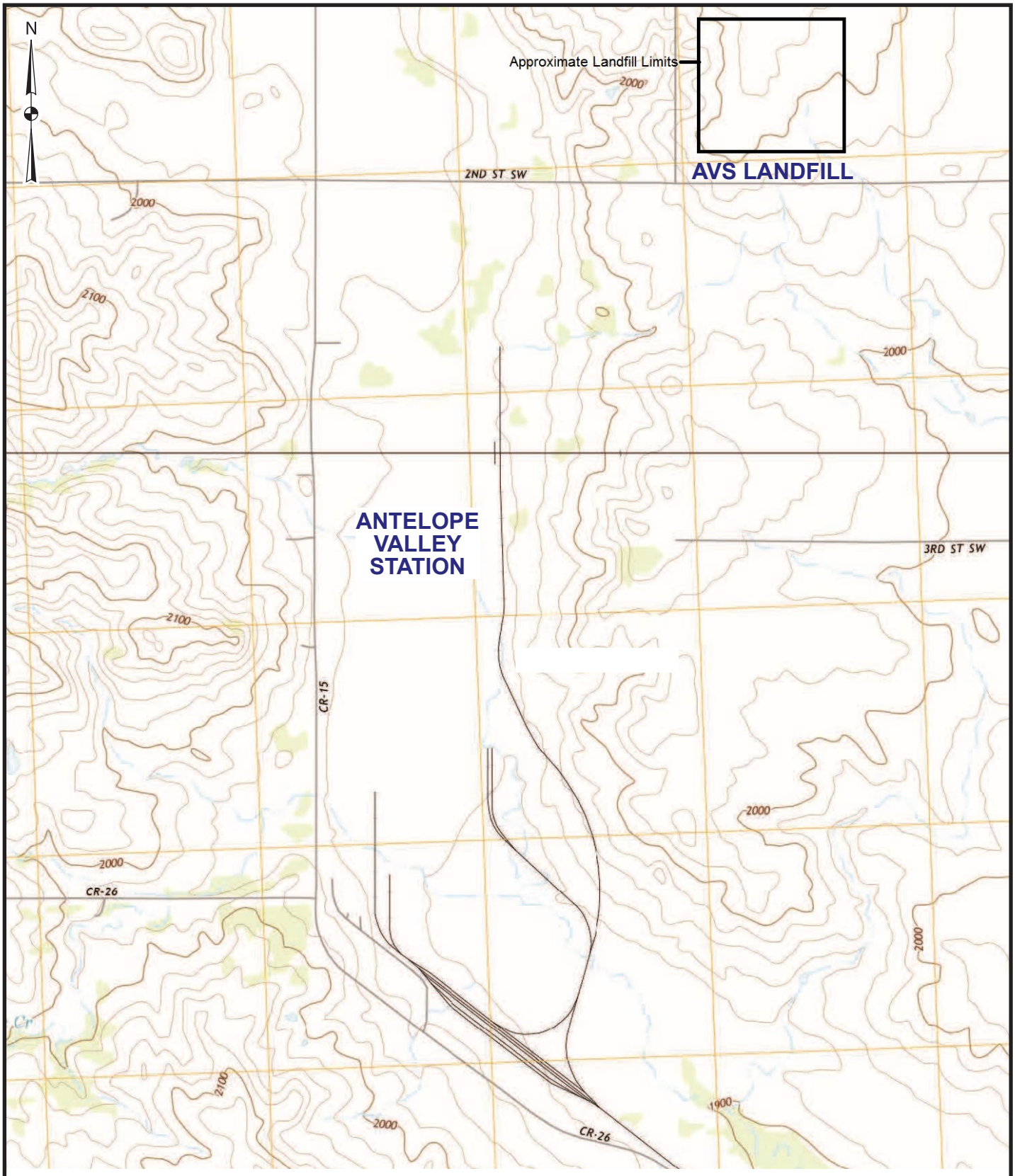
Starks, T. H. 1988. Evaluation of Control Chart Methodologies for RCRA Waste Sites, U.S. Environmental Protection Agency EPA/600/4-88/040. December. 40 pp.

U.S. Environmental Protection Agency (USEPA). 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Unified Guidance. EPA 530-R-09-007. March 2009. 884 pp.

Figures



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0 2,000 4,000

APPROXIMATE SCALE IN FEET

ND

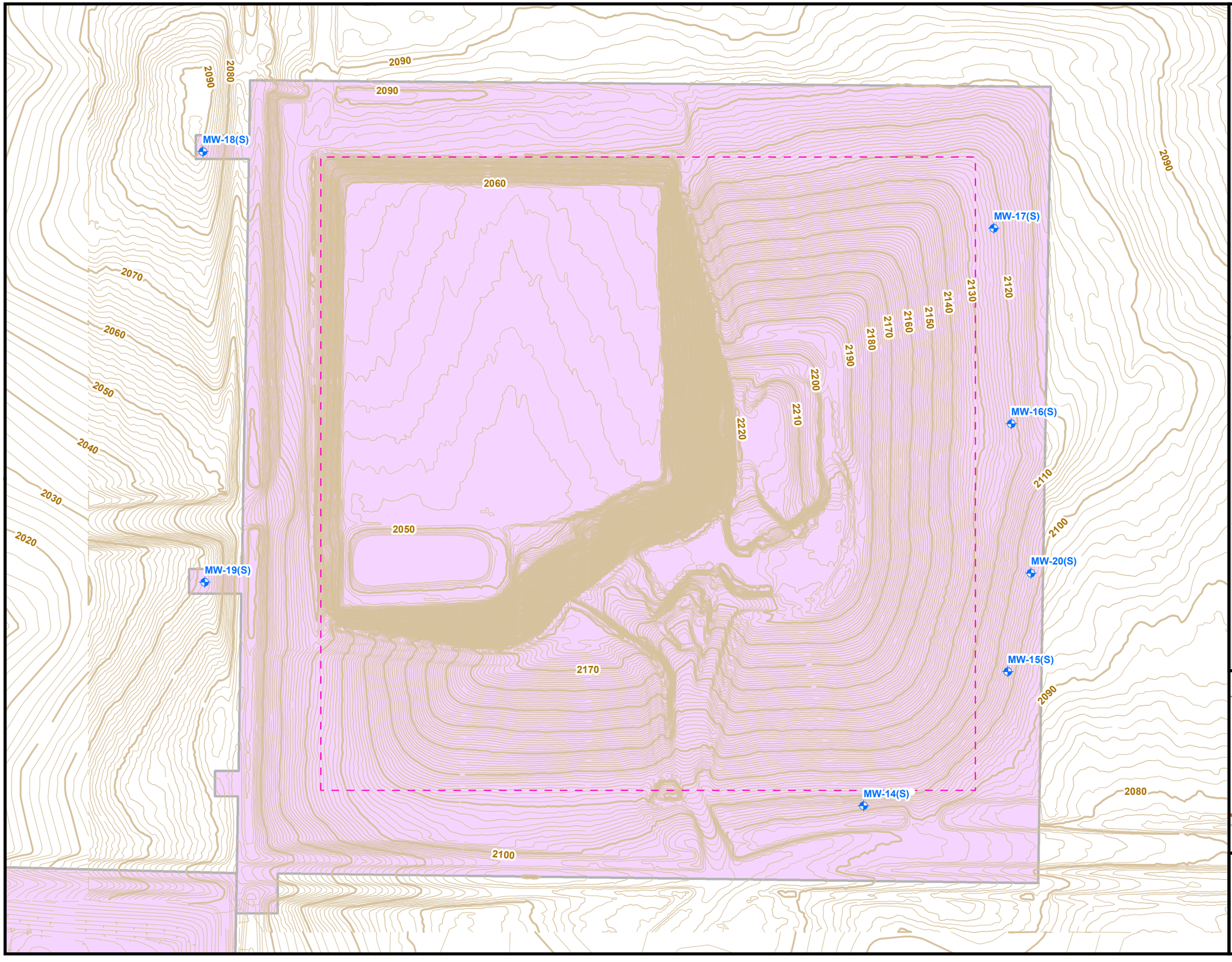
Quadrangle Location

BASE MAP SOURCE: USGS 7½ minute topographic quadrangle maps: Beulah, North Dakota 2014; Beulah NE, North Dakota 2014.

BASIN ELECTRIC POWER COOPERATIVE

FIGURE 1
SITE LOCATION MAP
ANTELOPE VALLEY STATION LANDFILL

AECOM



Legend

- Monitoring Well
- Limits of Ash
- Surface Contours (2-foot interval)
- Permit Boundary

N
W E
S

1 inch = 300 feet

0 0.05 0.1 Miles

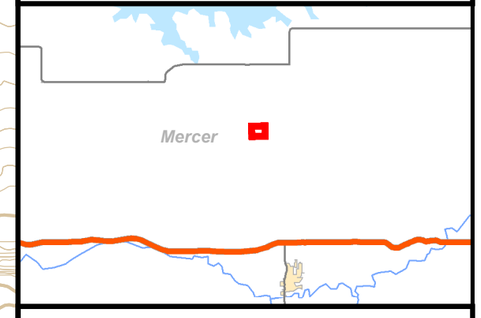


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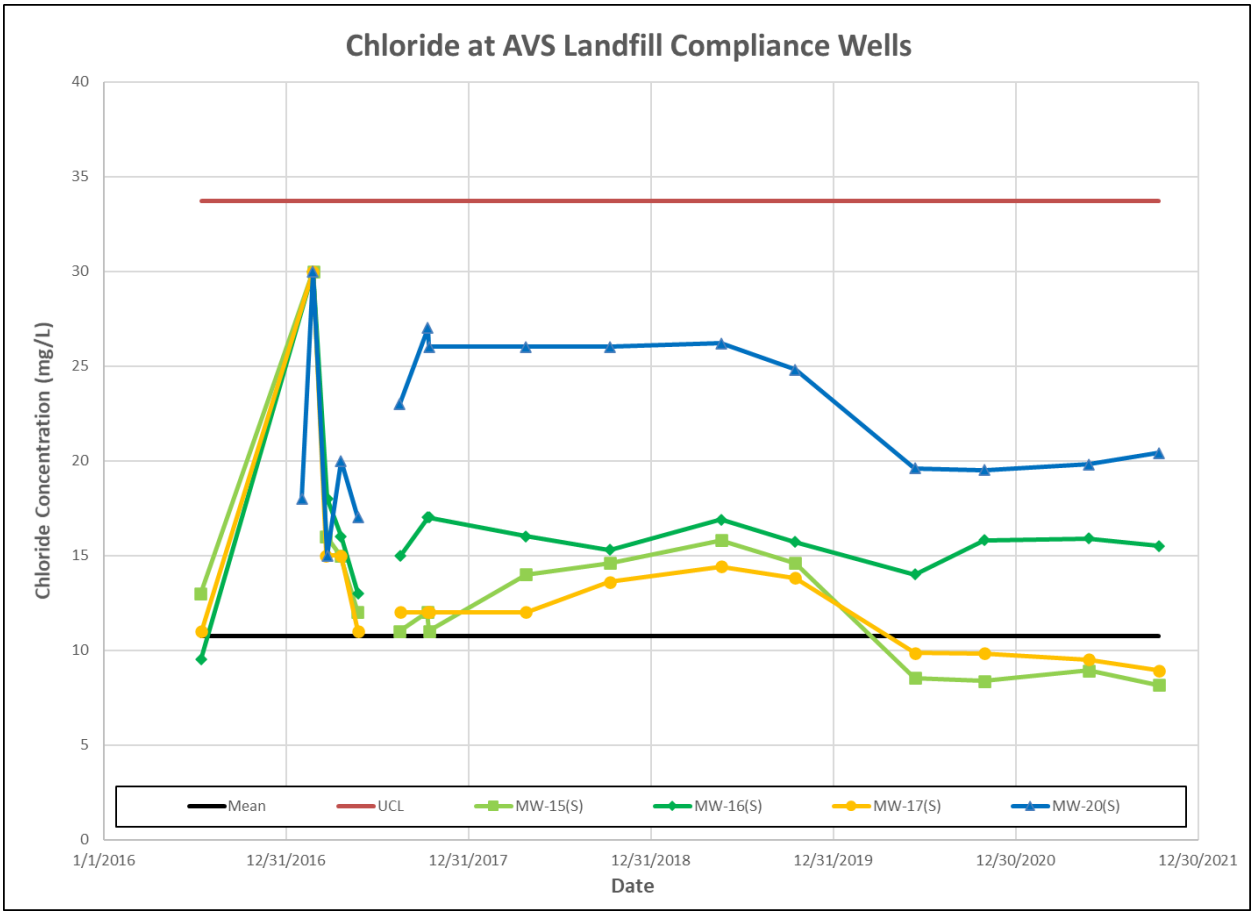
FIGURE 2
AVS CCR MONITORING WELL NETWORK

AECOM

Figure 3. Chloride Control Chart 2021
Antelope Valley Station



Tables

Table 1. Statistical Analysis Methods and Background Upper Prediction Limits
Antelope Valley Station

Parameter (Units)	Number of Samples	Percent Nondetects	Normal or Lognormal Distribution?	Statistical Method	Background Prediction or Control Limit
Boron (mg/L)	29	52	Yes/Yes	Parametric 95% UPL	0.2
Calcium (mg/L)	29	0	No/No	Nonparametric 95% UPL	21
Chloride (mg/L)	29	17	No/No	Control Chart 99.9% UCL	33.7
Fluoride (mg/L)	29	17	No/No	Nonparametric 95% UPL	3.75
pH (std units)	33	0	No/No	Nonparametric 95% UPL/LPL	9.99/7.37
Sulfate (mg/L)	29	0	No/No	Nonparametric 95% UPL	703.5
TDS (mg/L)	28	0	No/No	Nonparametric 95% UPL	2,154

Notes:

pH has both an LPL and UPL; all other constituents only have an UPL or

UCL mg/L= milligrams per liter

TDS = Total Dissolved Solids

UCL = Upper Control Limit

LPL = Lower Prediction Limit

UPL = Upper Prediction Limit

Table 2. Statistical Methods Analysis Results
Antelope Valley Station

Well	Location	B	Ca	Cl	F	pH (LPL/UPL)		SO_4	TDS
MW-15(S)	Downgradient								
MW-16(S)	Downgradient								
MW-17(S)	Downgradient								
MW-MW-20(S)	Downgradient								

Notes:

SSIs determined using interwell upper prediction limits (UPLs) at background monitoring well MW-18(S) and MW-19(S)

Less than or equal to background upper prediction limit (UPL) or greater than lower prediction limit (LPL) for pH

Unverified statistically significant increase (SSI) over background UPL or below background LPL for pH

Verified SSI over background UPL or below background LPL for pH

Attachment A
Sampling and Analysis Report, 2021 CCR Monitoring Program

AECOM Imagine it. Delivered.

2021 Sampling and Analysis Report AVS Landfill CCR Monitoring Program

Antelope Valley Station
Beulah, North Dakota

Basin Electric Power Cooperative

January 31, 2022

Prepared for:

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Project 60635022

Table of Contents

Figures

Tables

Appendix

List of Acronyms

AECOM	AECOM Technical Services, Inc.
AVS	Antelope Valley Station
Basin	Basin Electric Power Cooperative
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency

1. Introduction

On behalf of Basin Electric Power Cooperative (Basin), AECOM Technical Services, Inc. (AECOM) prepared this Coal Combustion Residuals (CCR) Groundwater Sampling and Analysis Report for the Basin Antelope Valley Station (AVS) CCR Landfill. The objective of the report is to provide a description of the field and office activities performed in 2021 in support of the AVS CCR Landfill groundwater monitoring program.

This Sampling and Analysis Report was prepared to present the results of sampling and analysis of groundwater conducted for the monitoring requirements of the United States Environmental Protection Agency (EPA) CCR rule (Chapter 40 of the Code of Federal Regulations (CFR), Sections 257.90 to 257.98). Specifically, the report presents the data collected for the two groundwater detection monitoring events conducted in 2021.

2. Groundwater Flow

As required by 40 CFR Section 257.93(c), groundwater elevations were measured in each well prior to purging each time groundwater was sampled. The measurements, presented in **Table 1**, were used to create potentiometric surface maps for the uppermost aquifer for the detection monitoring events. The resulting potentiometric surface maps were used to evaluate the direction and rate of groundwater flow across the subject CCR unit. **Figure 1** and **Figure 2** represent potentiometric surface maps constructed using measurements taken from May 24-26, 2021 and October 11-12, 2021, respectively. The maps show the inferred groundwater flow directions for the CCR unit. These potentiometric maps illustrate groundwater flow patterns that are generally consistent with the patterns observed during previous monitoring events. Calculated groundwater flow velocities are summarized in **Table 2**.

Based on the groundwater flow conditions documented in this chapter, the relative function of the monitoring wells employed in the AVS CCR Landfill groundwater monitoring system are as follows:

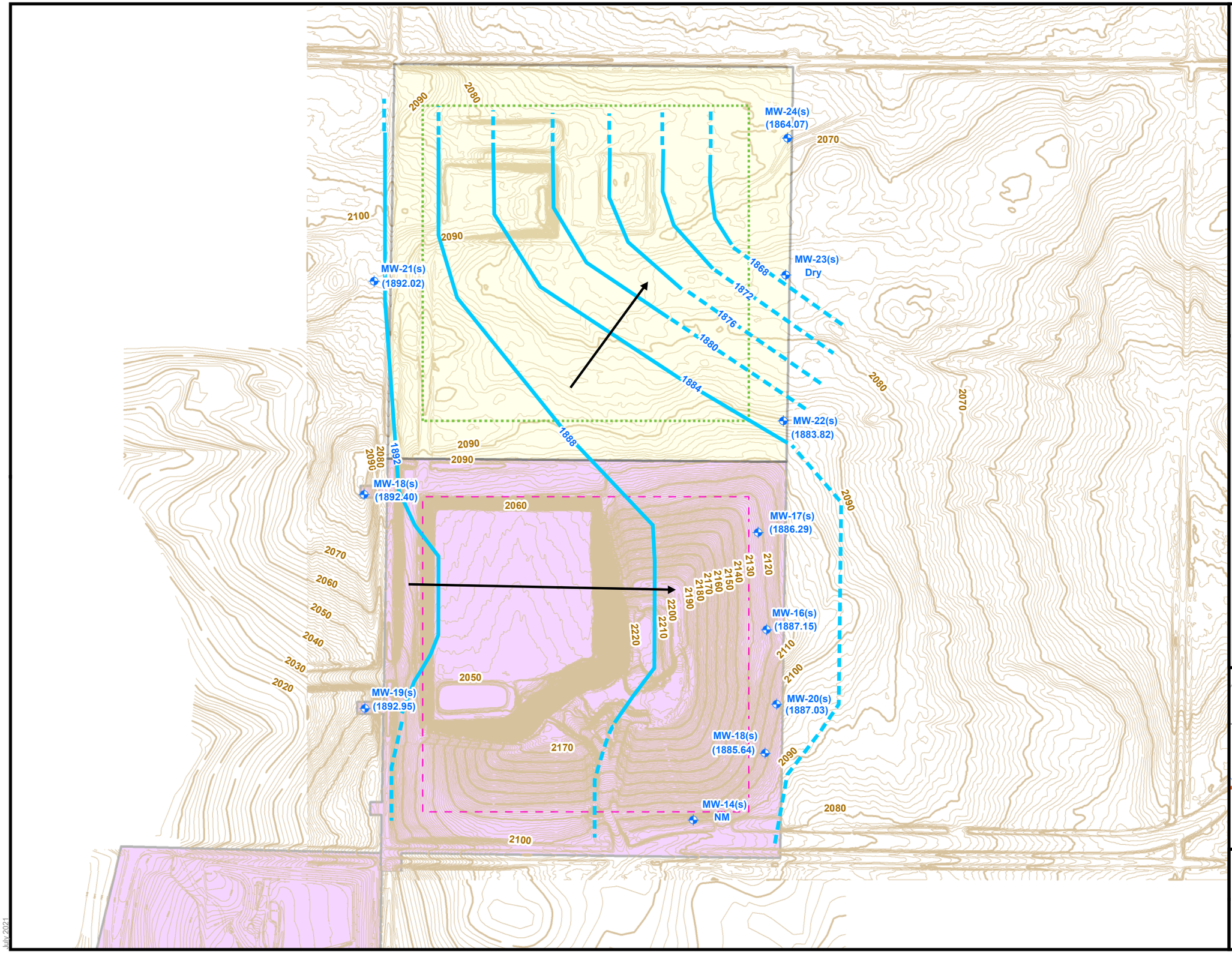
CCR unit	Background wells	Downgradient wells
Landfill	MW-18(S), MW-19(S)	MW15(S), MW-16(S), MW-17(S), MW-20(S)

Monitoring well MW-14(S) is being excluded from the groundwater monitoring network due to insufficient water production to obtain a representative sample. However, it remains in place for optional collection of groundwater level measurements for potential use in potentiometric mapping as appropriate. Groundwater level measurements at MW-14(S) were not recorded in 2021.

3. Groundwater Quality

The analytical testing laboratory provided reports presenting the results of laboratory analysis for each monitoring event. These laboratory reports are included in the operating record, are presented in **Appendix I**, and were reviewed for completeness against the project-required methods and the chain-of-custody forms. Laboratory reports were also reviewed for holding times, and for appropriate flagging based on the quality assurance/quality control testing results provided by the laboratory. The results were compiled into a summary form as presented in **Table 3**.

Figures



Legend

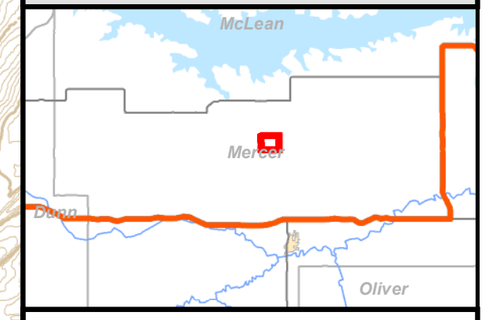
- Approximate Landfill Expansion
- Approximate landfill Expansion Limits of Ash
- Limits of Ash
- Monitoring Well
- Surface Contours (2-foot interval)
- Permit Boundary
- Piezometric Surface Contour Dashed where inferred (4-foot interval)
- Groundwater Flow Direction

Note: Groundwater elevations were obtained on May 24, 2021.

N
W E
S

1 inch = 600 feet

0 0.1 0.2 Miles

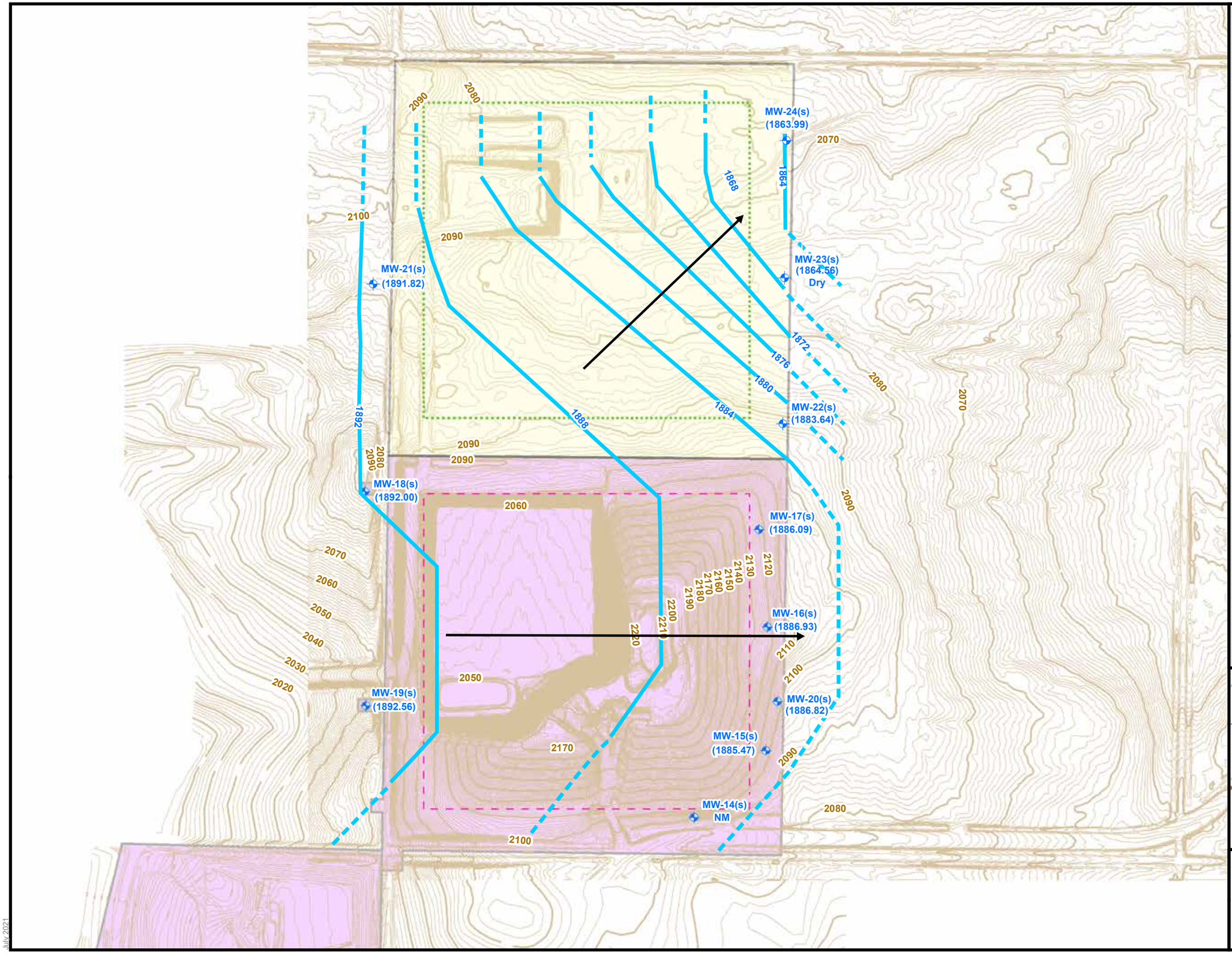


BASIN ELECTRIC POWER COOPERATIVE
FIGURE 1
Potentiometric Surface Map, May 2021
AVS LANDFILL

JOB NO. 60635022

AECOM

July 2021



Legend

- Approximate Landfill Expansion
- Approximate landfill Expansion Limits of Ash
- Limits of Ash
- A — Monitoring Well
- Surface Contours (2-foot interval)
- Permit Boundary

Piezometric Surface Contour
Dashed where inferred
(4-foot interval)

Groundwater Flow Direction

Note: Groundwater elevations were obtained on September 29, 2021 and October 11-12, 2021).

N
W E
S

1 inch = 600 feet

0 0.1 0.2 Miles

BASIN ELECTRIC POWER COOPERATIVE
FIGURE 2
Potentiometric surface Map, October 2021
AVS LANDFILL

JOB NO. 60635022

AECOM

July 2021

Tables

TABLE 1

2021 GROUNDWATER MONITORING WATER LEVELS AND ELEVATIONS
CCR PROGRAM MONITORING WELLS
ANTELOPE VALLEY STATION CCR LANDFILL- BEULAH, ND

Well ID	Reference Elevation Top of Casing (feet, NAVD 88)	May 24-26, 2021 Depth to Water (feet)	May 24-26, 2021 Groundwater Elevation (feet, NAVD 88)	October 11-12, 2021 Depth to Water (feet)	October 11-12, 2021 Groundwater Elevation (feet, NAVD 88)
ACTIVE LANDFILL					
MW-14(S)	2093.41	Not Measured	Not Measured	Not Measured	Not Measured
MW-15(S)	2104.77	219.13	1885.64	219.30	1885.47
MW-16(S)	2123.59	236.44	1887.15	236.66	1886.93
MW-17(S)	2124.89	238.60	1886.29	238.80	1886.09
MW-18(S)	2091.60	199.2	1892.40	199.6	1892.00
MW-19(S)	2042.56	149.61	1892.95	150	1892.56
MW-20(S)	2107.47	220.44	1887.03	220.65	1886.82

Well ID	Reference Elevation Top of Casing (feet, NAVD 88)	May 24-26, 2021 Depth to Water (feet)	May 24-26, 2021 Groundwater Elevation (feet, NAVD 88)	October 11-12, 2021 Depth to Water (feet)	October 11-12, 2021 Groundwater Elevation (feet, NAVD 88)
LANDFILL EXPANSION AREA (UNDER CONSTRUCTION)					
		May 24-26, 2021	**May 24-26, 2021**	**September 29, 2021**	**September 29, 2021**
MW-21(S)	2094.72	202.70	1892.02	202.9	1891.82
MW-22(S)	2093.90	210.08	1883.82	210.26	1883.64
MW-23(S)	2080.16	Dry (TD = 215.60)	Dry	Dry	Dry
MW-24(S)	2070.74	206.67	1864.07	206.75	1863.99

Notes:

NAVD 88 - North American Verticle Datum 1988

TABLE 2

GROUNDWATER GRADIENT AND SEEPAGE VELOCITY ESTIMATE
CCR PROGRAM MONITORING WELLS
ANTELOPE VALLEY STATION CCR LANDFILL – BEULAH, NORTH DAKOTA

Date of event	d_l (ft)	d_h (ft)	i (ft/ft)	n_e	K (ft/day)	v_s (ft/day)
7/13/2016	1050	3	2.86E-03	0.185	0.234	3.62E-03
2/22/2017	1140	3	2.63E-03	0.185	0.234	3.33E-03
3/21/2017	1020	2	1.96E-03	0.185	0.234	2.48E-03
4/19/2017	1050	3	2.86E-03	0.185	0.234	3.62E-03
5/23/2017	1230	3	2.44E-03	0.185	0.234	3.09E-03
6/28/2017	1020	3	2.94E-03	0.185	0.234	3.72E-03
7/24/2017	1110	3	2.70E-03	0.185	0.234	3.42E-03
8/16/2017	1410	3	2.13E-03	0.185	0.234	2.69E-03
4/25/2018	1260	3	2.38E-03	0.185	0.234	3.01E-03
10/10/2018	1245	3	2.41E-03	0.185	0.234	3.05E-03
5/21/2019	1425	3	2.11E-03	0.185	0.234	2.66E-03
10/16/2019	1500	3	2.00E-03	0.185	0.234	2.53E-03
6/10/2020	1170	2	1.71E-03	0.185	0.234	2.16E-03
10/27/2020	1110	2	1.80E-03	0.185	0.234	2.28E-03
5/24/2021	1600	4	2.5E-03	0.185	0.234	3.16E-03
10/11/2021	1650	4	2.4E-03	0.185	0.234	3.07E-03

d_l = Horizontal separation between upgradient and downgradient locations perpendicular to potentiometric contours

d_h = Change in hydraulic head between upgradient and downgradient locations

i = Hydraulic gradient (change in elevation over distance)

n_e = Site average porosity of 18.5%

K = Site average hydraulic conductivity of 2.34 E-01 ft/day from slug and pumping tests at site

v_s = Seepage Velocity (ft/day)

Hydraulic Gradient Governing Equation[1] – $$i = -{dh}/{dl}$$

Seepage Velocity Governing Equation[2] – $$v_s = {-K * i}/{n_e}$$

Table 3

2021 Analytical Results Summary
AVS Landfill CCR Monitoring Well Network
Antelope Valley Station Landfill - Beulah, North Dakota

			Appendix III Constituents						
Well ID	Event	Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
MW-15(S)	May 2021	5/25/2021	0.155	5.32	8.93	1.47	7.77	380	1860
MW-16(S)	May 2021	5/25/2021	0.172	3.96	15.9	1.84	8.72	79.3	1120
MW-17(S)	May 2021	5/25/2021	0.156	4.74	9.51	1.49	7.87	226	1740
MW-18(S)	May 2021	5/26/2021	0.121	4.36	4.78	1.35	9.09	395	1670
MW-19(S) Dup	May 2021	5/26/2021	0.164	4.39	12.1	0.903	7.87	766	2110
MW-19(S)	May 2021	5/26/2021	0.166	4.43	12.1	0.909	7.87	707	2120
MW-20(S)	May 2021	5/25/2021	0.151	6.73	19.8	1.31	7.84	71.7	1840
MW-15(S)	October 2021	10/12/2021	0.144	4.04	8.16	1.62	8.17	399	1810
MW-16(S)	October 2021	10/12/2021	0.176	3.51	15.5	1.93	8.96	71.6	1050
MW-17(S)	October 2021	10/12/2021	0.155	4.22	8.92	1.56	8.2	211	1700
MW-18(S)	October 2021	10/12/2021	0.125	9.58	4.38	1.39	9.46	401	1650
MW-19(S) Dup	October 2021	10/12/2021	0.16	4.13	11.9	0.925	7.99	766	2080
MW-19(S)	October 2021	10/12/2021	0.159	4.11	12.0	0.878	7.99	781	2090
MW-20(S)	October 2021	10/12/2021	0.154	6.12	20.4	1.41	7.89	66.6	1810

Notes:
mg/L = milligrams per liter
S.U. = Standard units

Appendix I: Laboratory Reports

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

Laboratory Job ID: 280-149165-1
Laboratory Sample Delivery Group: BEPC AVS LANDFILL
Client Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

For:
Basin Electric Power Cooperative
1717 E Interstate Ave
Bismarck, North Dakota 58504

Attn: Aaron Knutson

Shelby Turner

Authorized for release by:
6/30/2021 9:42:18 AM

Shelby Turner, Project Manager I
(303)736-0100
Shelby.Turner@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-1
SDG: BEPC AVS LANDFILL

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 280-149165-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: Basin Electric Power Cooperative

Project: CCR Groundwater - ND Sites - BEPC AVS LANDFILL

Report Number: 280-149165-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 5/28/2021 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.5º C and 2.3º C.

Receipt Exceptions

Samples MW-22s (280-149165-4), MW-24s (280-149165-6) and MW-21s (280-149165-9) are reported separately under this SDG (280-149165-1) per reporting format requirements for radiochemistry analyses. The rest of the samples listed on the COC are reported under SDG 280-149165-2.

The Chain-of-Custody (COC) was incomplete as received. There was no collection time/date documented on the COC and no specific analyses were designated for the following sample: DUP (280-149165-10). The sample was logged per the containers received.

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): MW-17s (280-149165-1). The container label lists collection time "10:45", while the COC lists "10:35". The sample was logged per the collection time listed on the COC.

RADIUM-226 (GFPC)

Samples MW-22s (280-149165-4), MW-24s (280-149165-6) and MW-21s (280-149165-9) were analyzed for Radium-226 (GFPC) in accordance with SW 846 9315. The samples were prepared on 06/04/2021 and analyzed on 06/29/2021.

During the in-growth process, the following samples needed to be filtered due to sediment present in the samples: MW-22s (280-149165-4), MW-24s (280-149165-6) and MW-21s (280-149165-9). This is an indicator of matrix interference.

The following samples were prepared at a reduced aliquot due to matrix: MW-22s (280-149165-4), MW-24s (280-149165-6) and MW-21s (280-149165-9).

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 280-149165-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

RADIUM-228

Samples MW-22s (280-149165-4), MW-24s (280-149165-6) and MW-21s (280-149165-9) were analyzed for Radium-228 in accordance with 9320. The samples were prepared on 06/04/2021 and analyzed on 06/25/2021.

During the in-growth process, the following samples needed to be filtered due to sediment present in the samples: MW-22s (280-149165-4), MW-24s (280-149165-6) and MW-21s (280-149165-9). This is an indicator of matrix interference.

The following samples were prepared at a reduced aliquot due to matrix: MW-22s (280-149165-4), MW-24s (280-149165-6) and MW-21s (280-149165-9).

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

RADIUM-226/RADIUM-228 (GFPC)

Samples MW-22s (280-149165-4), MW-24s (280-149165-6) and MW-21s (280-149165-9) were analyzed for Radium-226/Radium-228 (GFPC) in accordance with 9315/9320. The samples were analyzed on 06/29/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-1
SDG: BEPC AVS LANDFILL

Client Sample ID: MW-22s — Lab Sample ID: 280-149165-4

No Detections.

Client Sample ID: MW-24s — Lab Sample ID: 280-149165-6

No Detections.

Client Sample ID: MW-21s — Lab Sample ID: 280-149165-9

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-1
SDG: BEPC AVS LANDFILL

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-1
SDG: BEPC AVS LANDFILL

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-149165-4	MW-22s	Water	05/24/21 14:30	05/28/21 09:45	
280-149165-6	MW-24s	Water	05/25/21 12:00	05/28/21 09:45	
280-149165-9	MW-21s	Water	05/26/21 12:30	05/28/21 09:45	

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-22s
Date Collected: 05/24/21 14:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.139	U	0.161	0.161	1.00	0.262	pCi/L	06/04/21 16:30	06/29/21 07:09	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*74.1*		*40 - 110*	*06/04/21 16:30*	*06/29/21 07:09*	*1*

Client Sample ID: MW-24s
Date Collected: 05/25/21 12:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.176	U	0.165	0.166	1.00	0.257	pCi/L	06/04/21 16:30	06/29/21 07:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*69.8*		*40 - 110*	*06/04/21 16:30*	*06/29/21 07:11*	*1*

Client Sample ID: MW-21s
Date Collected: 05/26/21 12:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.365**		0.179	0.182	1.00	0.224	pCi/L	06/04/21 16:30	06/29/21 07:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*78.8*		*40 - 110*	*06/04/21 16:30*	*06/29/21 07:11*	*1*

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-22s
Date Collected: 05/24/21 14:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.250	U	0.442	0.443	1.00	0.748	pCi/L	06/04/21 16:58	06/25/21 10:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*74.1*		*40 - 110*	*06/04/21 16:58*	*06/25/21 10:34*	*1*
Y Carrier	*90.5*		*40 - 110*	*06/04/21 16:58*	*06/25/21 10:34*	*1*

Client Sample ID: MW-24s
Date Collected: 05/25/21 12:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.594	U	0.399	0.402	1.00	0.611	pCi/L	06/04/21 16:58	06/25/21 10:34	1

Method: 9320 - Radium-228 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	69.8		40 - 110	06/04/21 16:58	06/25/21 10:34	1
Y Carrier	90.8		40 - 110	06/04/21 16:58	06/25/21 10:34	1

Client Sample ID: MW-21s
Date Collected: 05/26/21 12:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.572	U	0.394	0.398	1.00	0.611	pCi/L	06/04/21 16:58	06/25/21 10:34	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	78.8		40 - 110	06/04/21 16:58	06/25/21 10:34	1
Y Carrier	89.0		40 - 110	06/04/21 16:58	06/25/21 10:34	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MW-22s
Date Collected: 05/24/21 14:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.388	U	0.470	0.471	5.00	0.748	pCi/L		06/29/21 21:08	1

Client Sample ID: MW-24s
Date Collected: 05/25/21 12:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.770**		0.432	0.435	5.00	0.611	pCi/L		06/29/21 21:08	1

Client Sample ID: MW-21s
Date Collected: 05/26/21 12:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.937**		0.433	0.438	5.00	0.611	pCi/L		06/29/21 21:08	1

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-512827/19-A
Matrix: Water
Analysis Batch: 516499

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 512827

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1052	U	0.131	0.131	1.00	0.216	pCi/L	06/04/21 16:30	06/29/21 15:37	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.5*		*40 - 110*	*06/04/21 16:30*	*06/29/21 15:37*	*1*

Lab Sample ID: LCS 160-512827/1-A
Matrix: Water
Analysis Batch: 516499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 512827

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			15.1	13.55		1.51	1.00	0.234	pCi/L	90	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*84.1*		*40 - 110*

Lab Sample ID: LCSD 160-512827/2-A
Matrix: Water
Analysis Batch: 516499

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 512827

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			15.1	13.50		1.49	1.00	0.210	pCi/L	89	75 - 125	0.02	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*84.4*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-512828/19-A
Matrix: Water
Analysis Batch: 516165

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 512828

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1416	U	0.303	0.303	1.00	0.520	pCi/L	06/04/21 16:58	06/25/21 10:36	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.5*		*40 - 110*	*06/04/21 16:58*	*06/25/21 10:36*	*1*
Y Carrier	*92.0*		*40 - 110*	*06/04/21 16:58*	*06/25/21 10:36*	*1*

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-512828/1-A
Matrix: Water
Analysis Batch: 516165

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 512828

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			12.8	14.18		1.65	1.00	0.504	pCi/L	111	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*84.1*		*40 - 110*
Y Carrier	*89.0*		*40 - 110*

Lab Sample ID: LCSD 160-512828/2-A
Matrix: Water
Analysis Batch: 516165

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 512828

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			12.8	13.69		1.60	1.00	0.528	pCi/L	107	75 - 125	0.15	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*84.4*		*40 - 110*
Y Carrier	*89.0*		*40 - 110*

QC Association Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-1
SDG: BEPC AVS LANDFILL

Rad

Prep Batch: 512827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-4	MW-22s	Total/NA	Water	PrecSep-21	
280-149165-6	MW-24s	Total/NA	Water	PrecSep-21	
280-149165-9	MW-21s	Total/NA	Water	PrecSep-21	
MB 160-512827/19-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-512827/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-512827/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 512828

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-4	MW-22s	Total/NA	Water	PrecSep_0	
280-149165-6	MW-24s	Total/NA	Water	PrecSep_0	
280-149165-9	MW-21s	Total/NA	Water	PrecSep_0	
MB 160-512828/19-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-512828/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-512828/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-1
SDG: BEPC AVS LANDFILL

Client Sample ID: MW-22s

Date Collected: 05/24/21 14:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.13 mL	1.0 g	512827	06/04/21 16:30	MJ	TAL SL
Total/NA	Analysis	9315		1			516499	06/29/21 07:09	ANW	TAL SL
Total/NA	Prep	PrecSep_0			750.13 mL	1.0 g	512828	06/04/21 16:58	MJ	TAL SL
Total/NA	Analysis	9320		1			516165	06/25/21 10:34	ANW	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			516646	06/29/21 21:08	GRW	TAL SL

Client Sample ID: MW-24s

Date Collected: 05/25/21 12:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.70 mL	1.0 g	512827	06/04/21 16:30	MJ	TAL SL
Total/NA	Analysis	9315		1			516593	06/29/21 07:11	ANW	TAL SL
Total/NA	Prep	PrecSep_0			750.70 mL	1.0 g	512828	06/04/21 16:58	MJ	TAL SL
Total/NA	Analysis	9320		1			516165	06/25/21 10:34	ANW	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			516646	06/29/21 21:08	GRW	TAL SL

Client Sample ID: MW-21s

Date Collected: 05/26/21 12:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			751.87 mL	1.0 g	512827	06/04/21 16:30	MJ	TAL SL
Total/NA	Analysis	9315		1			516593	06/29/21 07:11	ANW	TAL SL
Total/NA	Prep	PrecSep_0			751.87 mL	1.0 g	512828	06/04/21 16:58	MJ	TAL SL
Total/NA	Analysis	9320		1			516165	06/25/21 10:34	ANW	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			516646	06/29/21 21:08	GRW	TAL SL

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-1
SDG: BEPC AVS LANDFILL

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-22
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-21
California	Los Angeles County Sanitation Districts	10259	06-30-21
California	State	2886	06-30-21
Connecticut	State	PH-0241	03-31-23
Florida	NELAP	E87689	06-30-21
HI - RadChem Recognition	State	n/a	06-30-21
Illinois	NELAP	004553	11-30-21
Iowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-21
Kentucky (DW)	State	KY90125	01-01-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-21
Louisiana	NELAP	04080	06-30-21
Louisiana (DW)	State	LA011	12-31-21
Maryland	State	310	09-30-21
MI - RadChem Recognition	State	9005	06-30-21
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-21
New Jersey	NELAP	MO002	06-30-21
New York	NELAP	11616	04-01-22
North Dakota	State	R-207	06-30-21
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-21
Oregon	NELAP	4157	09-01-21
Pennsylvania	NELAP	68-00540	03-01-22
South Carolina	State	85002001	06-30-21
Texas	NELAP	T104704193	07-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542019-11	07-31-21
Virginia	NELAP	10310	06-14-22
Washington	State	C592	08-30-21
West Virginia DEP	State	381	10-31-21

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

280-149165 Chain of Custody

Eurofins | Environment Testing America

Client Information	Sampler: AARON Knutson	Lab PM: Turner, Shelby R	
Client Contact: Mr. Kevin Solie	Phone: 701-745-7238	E-Mail: Shelby.Turner@Eurofinset.com	
Company: Basin Electric Power Cooperative			
Address: 1717 East Interstate Avenue	Due Date Requested:		
City: Bismarck	TAT Requested (days): STANDARD		
State, Zip: ND, 58503			
Phone: 701-202-5096(Tel)	PO #: Purchase Order Requested		
Email: ksolie@bepc.com	WO #:		
Project Name: CCR Groundwater - North Dakota Site	Project #: 28021258		
Site: BEPC AVS LANDFILL	SSOW#:		

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C - Total B, Ca, Li (1 of 3), 6020A - Total 11 Metals (2 of 3), 7470A - Total Mercury (3 of 3) (APP III + IV)	2540C_Calcd - TDS	9056A_28D - Chloride, Fluoride, Sulfate	9315_Ra226, 9320_Ra226, Combined Radium-226 and Radium-228	6010C - Total Calcium and Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N			D		
MW-17S	5-25-21	1035	G	Water	N			X	X		X		pH - 7.87
MW-16S	5-25-21	1015	G	Water	N			X	X		X		pH - 8.72
MW-15S	5-25-21	0900	G	Water	N			X	X		X		pH - 7.77
MW-22S	5-24-21	1430	G	Water	N		X	X	X	X	X		pH - 7.99
MW-20S	5-25-21	0930	G	Water	N			X	X		X		pH - 7.84
MW-24S	5-25-21	1200	G	Water	N		X	X	X	X	X		pH - 7.80
MW-19S	5-26-21	0925	G	Water	N			X	X		X		pH - 7.87
MW-18S	5-26-21	1105	G	Water	N			X	X		X		pH - 9.09
MW-21S	5-26-21	1230	G	Water	N		X	X	X	X	X		pH - 7.83
DUP			G	Water	N								
				Water									

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by:	Date/Time: 5-27-21	Company: BEPC	Received by: JOE
Relinquished by:	Date/Time:	Company:	Received by:
Relinquished by:	Date/Time:	Company:	Received by:

Received by: JOE	Date/Time: 05/28/2021 0945	Company: ETADEN	
Received by:	Date/Time:	Company:	
Received by:	Date/Time:	Company:	

Custody Seals Intact: △ Yes △ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 1.9, 0.1 IR11 +0.4

Ver: 01/16/2019

0.1

ORIGIN ID:BISA (701) 745-3371
LELAND OLDS STATION
BASIN ELECTRIC
3901 HWY 200A

STANTON, ND 58571
UNITED STATES US

SHIP DATE: 27MAY21
ACTWGT: 53.00 LB
CAD: 251286197/INET43

BILL SENDER

Cust
DATE
SIGNATURE

eurofins

1553032

TO SHELBY TURNER
EUROFINS TESTAMERICA, DENVER
4955 YARROW ST

ARVADA CO 80002
(303) 736-0100
INV
PO.
REF CCR GROUNDWATER - ND SITE
DEPT

280-149165 Waybill

FedEx Ship Manager - Print Your Label(s)

1 of 2
TRK# 0201 7738 4062 5640
MASTER

FRI - 28 MAY
PRIORITY OVER

XH LAAA

CO-US

5/27/2021

650 4 10:30 E

Job ID: 280-144231-1

ORIGIN ID:BISA (701) 745-3371
LELAND OLDS STATION
BASIN ELECTRIC
3901 HWY 200A

STANTON, ND 58571
UNITED STATES US

SHIP DATE: 27MAY21
ACTWGT: 54.00 LB
CAD: 251286197/INET4340

BILL SENDER

TO SHELBY TURNER
EUROFINS TESTAMERICA, DENVER
4955 YARROW ST

ARVADA CO 80002
(303) 736-0100
INV
PO
REF: CCR GROUNDWATER - ND SITE
DEPT

FedEx Express

E

2 of 2
MPS# 0263 7738 4062 5559
Mstr# 7738 4062 5640 0201

FRI - 28 MAY 10:30A
PRIORITY OVERNIGHT

XH LAAA

80002
CO-US DEN

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Turner, Shelby R	Carrier Tracking No(s):	COC No: 280-570788.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Shelby.Turner@Eurofinset.com	State of Origin: North Dakota	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State - North Dakota		Job #: 280-149165-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 6/28/2021			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: CCR Groundwater - ND Sites- BEPC AVS LANDFILL	Project #: 28021258			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226/PrecSep_21 Standard Target List	9320_Ra228/PrecSep_0 Standard Target List	Ra226Ra228_GFPC	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MW-22s (280-149165-4)	5/24/21	14:30 Central		Water			X	X	X	2	
MW-24s (280-149165-6)	5/25/21	12:00 Central		Water			X	X	X	2	
MW-21s (280-149165-9)	5/26/21	12:30 Central		Water			X	X	X	2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	6/1/21 13K		PE		
Relinquished by: PE	Date/Time:	Company	Received by:	Date/Time: 6/2/21 0925	Company ETAST
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: Basin Electric Power Cooperative

Job Number: 280-149165-1
SDG Number: BEPC AVS LANDFILL

Login Number: 149165
List Number: 1
Creator: Pottruff, Reed W

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Basin Electric Power Cooperative

Job Number: 280-149165-1
SDG Number: BEPC AVS LANDFILL

Login Number: 149165
List Number: 2
Creator: Worthington, Sierra M

List Source: Eurofins TestAmerica, St. Louis
List Creation: 06/03/21 07:47 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-1
SDG: BEPC AVS LANDFILL

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
		Ba
Lab Sample ID	Client Sample ID	(40-110)
280-149165-4	MW-22s	74.1
280-149165-6	MW-24s	69.8
280-149165-9	MW-21s	78.8
LCS 160-512827/1-A	Lab Control Sample	84.1
LCSD 160-512827/2-A	Lab Control Sample Dup	84.4
MB 160-512827/19-A	Method Blank	87.5

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
		Ba	Y
Lab Sample ID	Client Sample ID	(40-110)	(40-110)
280-149165-4	MW-22s	74.1	90.5
280-149165-6	MW-24s	69.8	90.8
280-149165-9	MW-21s	78.8	89.0
LCS 160-512828/1-A	Lab Control Sample	84.1	89.0
LCSD 160-512828/2-A	Lab Control Sample Dup	84.4	89.0
MB 160-512828/19-A	Method Blank	87.5	92.0

Tracer/Carrier Legend

Ba = Ba Carrier
Y = Y Carrier

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ANALYTICAL REPORT

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

Laboratory Job ID: 280-149165-2
Laboratory Sample Delivery Group: BEPC AVS LANDFILL
Client Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

For:
Basin Electric Power Cooperative
1717 E Interstate Ave
Bismarck, North Dakota 58504

Attn: Aaron Knutson

Shelby Turner

Authorized for release by:
6/29/2021 10:08:30 AM

Shelby Turner, Project Manager I
(303)736-0100
Shelby.Turner@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-2
SDG: BEPC AVS LANDFILL

Qualifiers

Metals

Qualifier	Qualifier Description
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 280-149165-2

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: Basin Electric Power Cooperative

Project: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Report Number: 280-149165-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 5/28/2021 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.5º C and 2.3º C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. There was no collection time/date documented on the COC and no specific analyses were designated for the following sample: DUP (280-149165-10). The sample was logged per the information documented on the containers received.

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): MW-17s (280-149165-1). The container labels list collection time "10:45", while the COC lists "10:35". The sample was logged per the collection time listed on the COC.

TOTAL RECOVERABLE METALS

Samples MW-17s (280-149165-1), MW-16s (280-149165-2), MW-15s (280-149165-3), MW-22s (280-149165-4), MW-20s (280-149165-5), MW-24s (280-149165-6), MW-19s (280-149165-7), MW-18s (280-149165-8), MW-21s (280-149165-9) and DUP (280-149165-10) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 06/10/2021 and 06/24/2021 and analyzed on 06/10/2021 and 06/25/2021.

Boron and Calcium failed the recovery criteria low for the MS of sample MW-17s (280-149165-1) in batch 280-539494. Boron and Calcium exceeded the RPD limit for the MSD. The associated LCS is within control limits for these analytes; therefore, qualified data has been reported. Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL METALS (ICPMS)

Samples MW-22s (280-149165-4), MW-24s (280-149165-6), MW-21s (280-149165-9) and DUP (280-149165-10) were analyzed for total metals (ICPMS) in accordance with EPA SW-846 6020A. The samples were prepared on 06/04/2021 and analyzed on 06/06/2021.

The low level continuing calibration verification (CCVL) associated with batch 280-538827 recovered above the upper control limit (130%) for Beryllium (180%). The samples associated with this CCVL were <RL (1ppb) for the affected analytes; therefore, the data has been reported.

Job ID: 280-149165-2 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY

Samples MW-22s (280-149165-4), MW-24s (280-149165-6), MW-21s (280-149165-9) and DUP (280-149165-10) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 06/11/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS

Samples MW-17s (280-149165-1), MW-16s (280-149165-2), MW-15s (280-149165-3), MW-22s (280-149165-4), MW-20s (280-149165-5), MW-24s (280-149165-6), MW-19s (280-149165-7), MW-18s (280-149165-8), MW-21s (280-149165-9) and DUP (280-149165-10) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 06/01/2021.

The following sample was prepared outside of the preparation holding time due to holiday weekend: MW-22s (280-149165-4). The sample is the only sample collected on 5/24 so the holding time expired on 5/31 when the lab was closed for Memorial Day. The client was notified on 6/8/21 and instructed the lab to proceed with reporting.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples MW-17s (280-149165-1), MW-16s (280-149165-2), MW-15s (280-149165-3), MW-22s (280-149165-4), MW-20s (280-149165-5), MW-24s (280-149165-6), MW-19s (280-149165-7), MW-18s (280-149165-8), MW-21s (280-149165-9) and DUP (280-149165-10) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A (28 Days). The samples were analyzed on 06/14/2021 and 06/15/2021.

Samples MW-17s (280-149165-1)[5X], MW-15s (280-149165-3)[5X], MW-22s (280-149165-4)[5X], MW-19s (280-149165-7)[5X], MW-18s (280-149165-8)[5X], MW-21s (280-149165-9)[5X] and DUP (280-149165-10)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-2
SDG: BEPC AVS LANDFILL

Client Sample ID: MW-17s — Lab Sample ID: 280-149165-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	156	F2 F1	100		ug/L	1		6010C	Total Recoverable
Calcium	4740	F2 F1	200		ug/L	1		6010C	Total Recoverable
Chloride	9.51		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.49		0.500		mg/L	1		9056A	Total/NA
Sulfate	226		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1740		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-16s — Lab Sample ID: 280-149165-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	172		100		ug/L	1		6010C	Total Recoverable
Calcium	3960		200		ug/L	1		6010C	Total Recoverable
Chloride	15.9		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.84		0.500		mg/L	1		9056A	Total/NA
Sulfate	79.3		5.00		mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	1120		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-15s — Lab Sample ID: 280-149165-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	155		100		ug/L	1		6010C	Total Recoverable
Calcium	5320		200		ug/L	1		6010C	Total Recoverable
Chloride	8.93		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.47		0.500		mg/L	1		9056A	Total/NA
Sulfate	380		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1860		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-22s — Lab Sample ID: 280-149165-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	147		100		ug/L	1		6010C	Total Recoverable
Calcium	2900		200		ug/L	1		6010C	Total Recoverable
Lithium	46.1		20.0		ug/L	1		6010C	Total Recoverable
Barium	53.3		1.00		ug/L	1		6020A	Total/NA
Chloride	7.84		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.69		0.500		mg/L	1		9056A	Total/NA
Sulfate	228		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1640	H	20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-20s — Lab Sample ID: 280-149165-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	151		100		ug/L	1		6010C	Total Recoverable
Calcium	6730		200		ug/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-2
SDG: BEPC AVS LANDFILL

Client Sample ID: MW-20s (Continued) — Lab Sample ID: 280-149165-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	19.8		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.31		0.500		mg/L	1		9056A	Total/NA
Sulfate	71.7		5.00		mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	1840		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-24s — Lab Sample ID: 280-149165-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	129		100		ug/L	1		6010C	Total Recoverable
Calcium	6080		200		ug/L	1		6010C	Total Recoverable
Lithium	77.9		20.0		ug/L	1		6010C	Total Recoverable
Barium	60.4		1.00		ug/L	1		6020A	Total/NA
Cobalt	1.28		1.00		ug/L	1		6020A	Total/NA
Molybdenum	13.8		2.00		ug/L	1		6020A	Total/NA
Chloride	42.9		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.59		0.500		mg/L	1		9056A	Total/NA
Sulfate	35.2		5.00		mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	2040		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-19s — Lab Sample ID: 280-149165-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	166		100		ug/L	1		6010C	Total Recoverable
Calcium	4430		200		ug/L	1		6010C	Total Recoverable
Chloride	12.1		3.00		mg/L	1		9056A	Total/NA
Fluoride	0.909		0.500		mg/L	1		9056A	Total/NA
Sulfate	707		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	2120		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-18s — Lab Sample ID: 280-149165-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	121		100		ug/L	1		6010C	Total Recoverable
Calcium	4360		200		ug/L	1		6010C	Total Recoverable
Chloride	4.78		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.35		0.500		mg/L	1		9056A	Total/NA
Sulfate	395		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1670		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-21s — Lab Sample ID: 280-149165-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	155		100		ug/L	1		6010C	Total Recoverable
Calcium	8620		200		ug/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-2
SDG: BEPC AVS LANDFILL

Client Sample ID: MW-21s (Continued) — Lab Sample ID: 280-149165-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	32.7		20.0		ug/L	1		6010C	Total Recoverable
Barium	53.5		1.00		ug/L	1		6020A	Total/NA
Cobalt	1.02		1.00		ug/L	1		6020A	Total/NA
Molybdenum	8.70		2.00		ug/L	1		6020A	Total/NA
Chloride	13.7		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.54		0.500		mg/L	1		9056A	Total/NA
Sulfate	617		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	2240		40.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: DUP — Lab Sample ID: 280-149165-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	164		100		ug/L	1		6010C	Total Recoverable
Calcium	4390		200		ug/L	1		6010C	Total Recoverable
Lithium	48.1		20.0		ug/L	1		6010C	Total Recoverable
Arsenic	0.504	J	5.00	0.330	ug/L	1		6020A	Total/NA
Barium	46.0		1.00	0.290	ug/L	1		6020A	Total/NA
Cobalt	0.225	J	1.00	0.0923	ug/L	1		6020A	Total/NA
Molybdenum	3.15	B	2.00	0.140	ug/L	1		6020A	Total/NA
Chloride	12.1		3.00		mg/L	1		9056A	Total/NA
Fluoride	0.903		0.500		mg/L	1		9056A	Total/NA
Sulfate	766		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	2110		20.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-2
SDG: BEPC AVS LANDFILL

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL DEN
6020A	Metals (ICP/MS)	SW846	TAL DEN
7470A	Mercury (CVAA)	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL DEN
3020A	Preparation, Total Metals	SW846	TAL DEN
7470A	Preparation, Mercury	SW846	TAL DEN

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-2
SDG: BEPC AVS LANDFILL

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-149165-1	MW-17s	Water	05/25/21 10:35	05/28/21 09:45	
280-149165-2	MW-16s	Water	05/25/21 10:15	05/28/21 09:45	
280-149165-3	MW-15s	Water	05/25/21 09:00	05/28/21 09:45	
280-149165-4	MW-22s	Water	05/24/21 14:30	05/28/21 09:45	
280-149165-5	MW-20s	Water	05/25/21 09:30	05/28/21 09:45	
280-149165-6	MW-24s	Water	05/25/21 12:00	05/28/21 09:45	
280-149165-7	MW-19s	Water	05/26/21 09:25	05/28/21 09:45	
280-149165-8	MW-18s	Water	05/26/21 11:05	05/28/21 09:45	
280-149165-9	MW-21s	Water	05/26/21 12:30	05/28/21 09:45	
280-149165-10	DUP	Water	05/26/21 00:00	05/28/21 09:45	

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-17s
Date Collected: 05/25/21 10:35
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	156	F2 F1	100		ug/L		06/10/21 07:47	06/10/21 19:55	1
Calcium	4740	F2 F1	200		ug/L		06/10/21 07:47	06/10/21 19:55	1

Client Sample ID: MW-16s
Date Collected: 05/25/21 10:15
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	172		100		ug/L		06/24/21 10:30	06/25/21 12:09	1
Calcium	3960		200		ug/L		06/24/21 10:30	06/25/21 12:09	1

Client Sample ID: MW-15s
Date Collected: 05/25/21 09:00
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	155		100		ug/L		06/10/21 07:47	06/10/21 20:28	1
Calcium	5320		200		ug/L		06/10/21 07:47	06/10/21 20:28	1

Client Sample ID: MW-22s
Date Collected: 05/24/21 14:30
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	147		100		ug/L		06/10/21 07:47	06/10/21 20:32	1
Calcium	2900		200		ug/L		06/10/21 07:47	06/10/21 20:32	1
Lithium	46.1		20.0		ug/L		06/24/21 10:30	06/25/21 12:39	1

Client Sample ID: MW-20s
Date Collected: 05/25/21 09:30
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	151		100		ug/L		06/10/21 07:47	06/10/21 20:36	1
Calcium	6730		200		ug/L		06/10/21 07:47	06/10/21 20:36	1

Client Sample ID: MW-24s
Date Collected: 05/25/21 12:00
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	129		100		ug/L		06/10/21 07:47	06/10/21 20:40	1
Calcium	6080		200		ug/L		06/10/21 07:47	06/10/21 20:40	1
Lithium	77.9		20.0		ug/L		06/24/21 10:30	06/25/21 12:46	1

Client Sample ID: MW-19s
Date Collected: 05/26/21 09:25
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	166		100		ug/L		06/10/21 07:47	06/10/21 20:44	1
Calcium	4430		200		ug/L		06/10/21 07:47	06/10/21 20:44	1

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW-18s
Date Collected: 05/26/21 11:05
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**121**		100		ug/L		06/10/21 07:47	06/10/21 20:47	1
Calcium	**4360**		200		ug/L		06/10/21 07:47	06/10/21 20:47	1

Client Sample ID: MW-21s
Date Collected: 05/26/21 12:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**155**		100		ug/L		06/10/21 07:47	06/10/21 20:51	1
Calcium	**8620**		200		ug/L		06/10/21 07:47	06/10/21 20:51	1
Lithium	**32.7**		20.0		ug/L		06/24/21 10:30	06/25/21 12:56	1

Client Sample ID: DUP
Date Collected: 05/26/21 00:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**164**		100		ug/L		06/10/21 07:47	06/10/21 20:55	1
Calcium	**4390**		200		ug/L		06/10/21 07:47	06/10/21 20:55	1
Lithium	**48.1**		20.0		ug/L		06/24/21 10:30	06/25/21 12:59	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: MW-22s
Date Collected: 05/24/21 14:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		06/04/21 16:05	06/06/21 19:39	1
Arsenic	ND		5.00		ug/L		06/04/21 16:05	06/06/21 19:39	1
Barium	**53.3**		1.00		ug/L		06/04/21 16:05	06/06/21 19:39	1
Beryllium	ND	^+	1.00		ug/L		06/04/21 16:05	06/06/21 19:39	1
Cadmium	ND		1.00		ug/L		06/04/21 16:05	06/06/21 19:39	1
Chromium	ND		2.00		ug/L		06/04/21 16:05	06/06/21 19:39	1
Cobalt	ND		1.00		ug/L		06/04/21 16:05	06/06/21 19:39	1
Lead	ND		1.00		ug/L		06/04/21 16:05	06/06/21 19:39	1
Molybdenum	ND		2.00		ug/L		06/04/21 16:05	06/06/21 19:39	1
Selenium	ND		5.00		ug/L		06/04/21 16:05	06/06/21 19:39	1
Thallium	ND		1.00		ug/L		06/04/21 16:05	06/06/21 19:39	1

Client Sample ID: MW-24s
Date Collected: 05/25/21 12:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		06/04/21 16:05	06/06/21 19:42	1
Arsenic	ND		5.00		ug/L		06/04/21 16:05	06/06/21 19:42	1
Barium	**60.4**		1.00		ug/L		06/04/21 16:05	06/06/21 19:42	1
Beryllium	ND	^+	1.00		ug/L		06/04/21 16:05	06/06/21 19:42	1
Cadmium	ND		1.00		ug/L		06/04/21 16:05	06/06/21 19:42	1
Chromium	ND		2.00		ug/L		06/04/21 16:05	06/06/21 19:42	1
Cobalt	**1.28**		1.00		ug/L		06/04/21 16:05	06/06/21 19:42	1
Lead	ND		1.00		ug/L		06/04/21 16:05	06/06/21 19:42	1
Molybdenum	**13.8**		2.00		ug/L		06/04/21 16:05	06/06/21 19:42	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: MW-24s
Date Collected: 05/25/21 12:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		5.00		ug/L		06/04/21 16:05	06/06/21 19:42	1
Thallium	ND		1.00		ug/L		06/04/21 16:05	06/06/21 19:42	1

Client Sample ID: MW-21s
Date Collected: 05/26/21 12:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		06/04/21 16:05	06/06/21 19:46	1
Arsenic	ND		5.00		ug/L		06/04/21 16:05	06/06/21 19:46	1
Barium	**53.5**		1.00		ug/L		06/04/21 16:05	06/06/21 19:46	1
Beryllium	ND	^+	1.00		ug/L		06/04/21 16:05	06/06/21 19:46	1
Cadmium	ND		1.00		ug/L		06/04/21 16:05	06/06/21 19:46	1
Chromium	ND		2.00		ug/L		06/04/21 16:05	06/06/21 19:46	1
Cobalt	**1.02**		1.00		ug/L		06/04/21 16:05	06/06/21 19:46	1
Lead	ND		1.00		ug/L		06/04/21 16:05	06/06/21 19:46	1
Molybdenum	**8.70**		2.00		ug/L		06/04/21 16:05	06/06/21 19:46	1
Selenium	ND		5.00		ug/L		06/04/21 16:05	06/06/21 19:46	1
Thallium	ND		1.00		ug/L		06/04/21 16:05	06/06/21 19:46	1

Client Sample ID: DUP
Date Collected: 05/26/21 00:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00	0.400	ug/L		06/04/21 16:05	06/06/21 19:50	1
Arsenic	**0.504**	**J**	5.00	0.330	ug/L		06/04/21 16:05	06/06/21 19:50	1
Barium	**46.0**		1.00	0.290	ug/L		06/04/21 16:05	06/06/21 19:50	1
Beryllium	ND	^+	1.00	0.0800	ug/L		06/04/21 16:05	06/06/21 19:50	1
Cadmium	ND		1.00	0.265	ug/L		06/04/21 16:05	06/06/21 19:50	1
Chromium	ND		2.00	0.500	ug/L		06/04/21 16:05	06/06/21 19:50	1
Cobalt	**0.225**	**J**	1.00	0.0923	ug/L		06/04/21 16:05	06/06/21 19:50	1
Lead	ND		1.00	0.180	ug/L		06/04/21 16:05	06/06/21 19:50	1
Molybdenum	**3.15**	**B**	2.00	0.140	ug/L		06/04/21 16:05	06/06/21 19:50	1
Selenium	ND		5.00	0.373	ug/L		06/04/21 16:05	06/06/21 19:50	1
Thallium	ND		1.00	0.0890	ug/L		06/04/21 16:05	06/06/21 19:50	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-22s
Date Collected: 05/24/21 14:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		06/11/21 16:00	06/11/21 19:47	1

Client Sample ID: MW-24s
Date Collected: 05/25/21 12:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		06/11/21 16:00	06/11/21 19:49	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW-21s
Date Collected: 05/26/21 12:30
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		06/11/21 16:00	06/11/21 19:57	1

Client Sample ID: DUP
Date Collected: 05/26/21 00:00
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		06/11/21 16:00	06/11/21 20:00	1

General Chemistry

Client Sample ID: MW-17s
Date Collected: 05/25/21 10:35
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.51		3.00		mg/L			06/14/21 19:39	1
Fluoride	1.49		0.500		mg/L			06/14/21 19:39	1
Sulfate	226		25.0		mg/L			06/14/21 19:53	5
Total Dissolved Solids (TDS)	1740		20.0		mg/L			06/01/21 09:58	1

Client Sample ID: MW-16s
Date Collected: 05/25/21 10:15
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	15.9		3.00		mg/L			06/14/21 20:38	1
Fluoride	1.84		0.500		mg/L			06/14/21 20:38	1
Sulfate	79.3		5.00		mg/L			06/14/21 20:38	1
Total Dissolved Solids (TDS)	1120		20.0		mg/L			06/01/21 09:58	1

Client Sample ID: MW-15s
Date Collected: 05/25/21 09:00
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.93		3.00		mg/L			06/14/21 21:08	1
Fluoride	1.47		0.500		mg/L			06/14/21 21:08	1
Sulfate	380		25.0		mg/L			06/14/21 21:23	5
Total Dissolved Solids (TDS)	1860		20.0		mg/L			06/01/21 09:58	1

Client Sample ID: MW-22s
Date Collected: 05/24/21 14:30
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.84		3.00		mg/L			06/14/21 21:38	1
Fluoride	1.69		0.500		mg/L			06/14/21 21:38	1
Sulfate	228		25.0		mg/L			06/14/21 21:53	5
Total Dissolved Solids (TDS)	1640	H	20.0		mg/L			06/01/21 09:58	1

General Chemistry

Client Sample ID: MW-20s
Date Collected: 05/25/21 09:30
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	19.8		3.00		mg/L			06/14/21 22:08	1
Fluoride	1.31		0.500		mg/L			06/14/21 22:08	1
Sulfate	71.7		5.00		mg/L			06/14/21 22:08	1
Total Dissolved Solids (TDS)	1840		20.0		mg/L			06/01/21 09:58	1

Client Sample ID: MW-24s
Date Collected: 05/25/21 12:00
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	42.9		3.00		mg/L			06/15/21 00:37	1
Fluoride	1.59		0.500		mg/L			06/15/21 00:37	1
Sulfate	35.2		5.00		mg/L			06/15/21 00:37	1
Total Dissolved Solids (TDS)	2040		20.0		mg/L			06/01/21 09:58	1

Client Sample ID: MW-19s
Date Collected: 05/26/21 09:25
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12.1		3.00		mg/L			06/15/21 01:07	1
Fluoride	0.909		0.500		mg/L			06/15/21 01:07	1
Sulfate	707		25.0		mg/L			06/15/21 01:22	5
Total Dissolved Solids (TDS)	2120		20.0		mg/L			06/01/21 09:58	1

Client Sample ID: MW-18s
Date Collected: 05/26/21 11:05
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.78		3.00		mg/L			06/15/21 01:37	1
Fluoride	1.35		0.500		mg/L			06/15/21 01:37	1
Sulfate	395		25.0		mg/L			06/15/21 01:52	5
Total Dissolved Solids (TDS)	1670		20.0		mg/L			06/01/21 09:58	1

Client Sample ID: MW-21s
Date Collected: 05/26/21 12:30
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13.7		3.00		mg/L			06/15/21 02:36	1
Fluoride	1.54		0.500		mg/L			06/15/21 02:36	1
Sulfate	617		25.0		mg/L			06/15/21 02:51	5
Total Dissolved Solids (TDS)	2240		40.0		mg/L			06/01/21 09:58	1

Client Sample ID: DUP
Date Collected: 05/26/21 00:00
Date Received: 05/28/21 09:45
Lab Sample ID: 280-149165-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12.1		3.00		mg/L			06/15/21 03:06	1
Fluoride	0.903		0.500		mg/L			06/15/21 03:06	1
Sulfate	766		25.0		mg/L			06/15/21 03:21	5
Total Dissolved Solids (TDS)	2110		20.0		mg/L			06/01/21 09:58	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 280-539034/1-A
Matrix: Water
Analysis Batch: 539494

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 539034

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		100		ug/L		06/10/21 07:47	06/10/21 19:48	1
Calcium	ND		200		ug/L		06/10/21 07:47	06/10/21 19:48	1

Lab Sample ID: LCS 280-539034/2-A
Matrix: Water
Analysis Batch: 539494

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 539034

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	1041		ug/L		104	86 - 110
Calcium	50000	52340		ug/L		105	90 - 111

Lab Sample ID: 280-149165-1 MS
Matrix: Water
Analysis Batch: 539494

Client Sample ID: MW-17s
Prep Type: Total Recoverable
Prep Batch: 539034

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	156	F2 F1	1000	452.6	F1	ug/L		30	87 - 113
Calcium	4740	F2 F1	50000	21590	F1	ug/L		34	48 - 153

Lab Sample ID: 280-149165-1 MSD
Matrix: Water
Analysis Batch: 539494

Client Sample ID: MW-17s
Prep Type: Total Recoverable
Prep Batch: 539034

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	156	F2 F1	1000	1224	F2	ug/L		107	87 - 113	92	20
Calcium	4740	F2 F1	50000	57400	F2	ug/L		105	48 - 153	91	20

Lab Sample ID: MB 280-541058/1-A
Matrix: Water
Analysis Batch: 541298

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 541058

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		100		ug/L		06/24/21 10:30	06/25/21 11:59	1
Calcium	ND		200		ug/L		06/24/21 10:30	06/25/21 11:59	1
Lithium	ND		20.0		ug/L		06/24/21 10:30	06/25/21 11:59	1

Lab Sample ID: LCS 280-541058/2-A
Matrix: Water
Analysis Batch: 541298

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 541058

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	977.8		ug/L		98	86 - 110
Calcium	50000	48690		ug/L		97	90 - 111
Lithium	1000	967.9		ug/L		97	90 - 112

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 280-149165-2 MS
Matrix: Water
Analysis Batch: 541298

Client Sample ID: MW-16s
Prep Type: Total Recoverable
Prep Batch: 541058

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	172		1000	1171		ug/L		100	87 - 113
Calcium	3960		50000	52750		ug/L		98	48 - 153
Lithium	ND		1000	1016		ug/L		101	89 - 114

Lab Sample ID: 280-149165-2 MSD
Matrix: Water
Analysis Batch: 541298

Client Sample ID: MW-16s
Prep Type: Total Recoverable
Prep Batch: 541058

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	172		1000	1146		ug/L		97	87 - 113	2	20
Calcium	3960		50000	51860		ug/L		96	48 - 153	2	20
Lithium	ND		1000	995.7		ug/L		99	89 - 114	2	20

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 280-538556/1-A
Matrix: Water
Analysis Batch: 538827

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 538556

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		06/04/21 16:05	06/06/21 18:43	1
Arsenic	ND		5.00		ug/L		06/04/21 16:05	06/06/21 18:43	1
Barium	ND		1.00		ug/L		06/04/21 16:05	06/06/21 18:43	1
Beryllium	ND	^+	1.00		ug/L		06/04/21 16:05	06/06/21 18:43	1
Cadmium	ND		1.00		ug/L		06/04/21 16:05	06/06/21 18:43	1
Chromium	ND		2.00		ug/L		06/04/21 16:05	06/06/21 18:43	1
Cobalt	ND		1.00		ug/L		06/04/21 16:05	06/06/21 18:43	1
Lead	ND		1.00		ug/L		06/04/21 16:05	06/06/21 18:43	1
Molybdenum	ND		2.00		ug/L		06/04/21 16:05	06/06/21 18:43	1
Selenium	ND		5.00		ug/L		06/04/21 16:05	06/06/21 18:43	1
Thallium	ND		1.00		ug/L		06/04/21 16:05	06/06/21 18:43	1

Lab Sample ID: LCS 280-538556/2-A
Matrix: Water
Analysis Batch: 538827

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 538556

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	40.0	36.93		ug/L		92	85 - 115
Arsenic	40.0	36.53		ug/L		91	85 - 117
Barium	40.0	38.02		ug/L		95	85 - 118
Beryllium	40.0	36.37	^+	ug/L		91	80 - 125
Cadmium	40.0	37.96		ug/L		95	85 - 115
Chromium	40.0	38.27		ug/L		96	84 - 121
Cobalt	40.0	37.77		ug/L		94	85 - 120
Lead	40.0	38.84		ug/L		97	85 - 118
Molybdenum	40.0	39.38		ug/L		98	85 - 119
Selenium	40.0	37.80		ug/L		95	77 - 122
Thallium	40.0	38.26		ug/L		96	85 - 118

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-539057/1-A
Matrix: Water
Analysis Batch: 539623

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 539057

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		06/11/21 16:00	06/11/21 19:27	1

Lab Sample ID: LCS 280-539057/2-A
Matrix: Water
Analysis Batch: 539623

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 539057

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.005032		mg/L		101	84 - 120

Lab Sample ID: LCSD 280-539057/3-A
Matrix: Water
Analysis Batch: 539623

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 539057

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.00500	0.005064		mg/L		101	84 - 120	1	15

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-539761/6
Matrix: Water
Analysis Batch: 539761

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.00		mg/L			06/14/21 17:13	1
Fluoride	ND		0.500		mg/L			06/14/21 17:13	1
Sulfate	ND		5.00		mg/L			06/14/21 17:13	1

Lab Sample ID: LCS 280-539761/4
Matrix: Water
Analysis Batch: 539761

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	97.08		mg/L		97	90 - 110
Fluoride	5.00	4.664		mg/L		93	90 - 110
Sulfate	100	95.04		mg/L		95	90 - 110

Lab Sample ID: LCSD 280-539761/5
Matrix: Water
Analysis Batch: 539761

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	97.12		mg/L		97	90 - 110	0	10
Fluoride	5.00	4.667		mg/L		93	90 - 110	0	10
Sulfate	100	94.90		mg/L		95	90 - 110	0	10

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MRL 280-539761/3
Matrix: Water
Analysis Batch: 539761

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	3.916		mg/L		78	50 - 150
Fluoride	0.500	0.5005		mg/L		100	50 - 150
Sulfate	5.00	ND		mg/L		76	50 - 150

Lab Sample ID: 280-149165-5 MS
Matrix: Water
Analysis Batch: 539761

Client Sample ID: MW-20s
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	19.8		50.0	70.58		mg/L		102	80 - 120
Fluoride	1.31		5.00	5.395		mg/L		82	80 - 120
Sulfate	71.7		50.0	127.9		mg/L		113	80 - 120

Lab Sample ID: 280-149165-5 MSD
Matrix: Water
Analysis Batch: 539761

Client Sample ID: MW-20s
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	19.8		50.0	70.80		mg/L		102	80 - 120	0	20
Fluoride	1.31		5.00	5.421		mg/L		82	80 - 120	0	20
Sulfate	71.7		50.0	128.3		mg/L		113	80 - 120	0	20

Lab Sample ID: 280-149165-5 DU
Matrix: Water
Analysis Batch: 539761

Client Sample ID: MW-20s
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	19.8		19.80		mg/L		0	15
Fluoride	1.31		1.317		mg/L		0.3	15
Sulfate	71.7		71.71		mg/L		0.08	15

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-538102/1
Matrix: Water
Analysis Batch: 538102

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10.0		mg/L			06/01/21 09:58	1

Lab Sample ID: LCS 280-538102/2
Matrix: Water
Analysis Batch: 538102

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	505	490.0		mg/L		97	88 - 114

Metals

Prep Batch: 538556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-4	MW-22s	Total/NA	Water	3020A	
280-149165-6	MW-24s	Total/NA	Water	3020A	
280-149165-9	MW-21s	Total/NA	Water	3020A	
280-149165-10	DUP	Total/NA	Water	3020A	
MB 280-538556/1-A	Method Blank	Total/NA	Water	3020A	
LCS 280-538556/2-A	Lab Control Sample	Total/NA	Water	3020A	

Analysis Batch: 538827

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-4	MW-22s	Total/NA	Water	6020A	538556
280-149165-6	MW-24s	Total/NA	Water	6020A	538556
280-149165-9	MW-21s	Total/NA	Water	6020A	538556
280-149165-10	DUP	Total/NA	Water	6020A	538556
MB 280-538556/1-A	Method Blank	Total/NA	Water	6020A	538556
LCS 280-538556/2-A	Lab Control Sample	Total/NA	Water	6020A	538556

Prep Batch: 539034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-1	MW-17s	Total Recoverable	Water	3005A	
280-149165-3	MW-15s	Total Recoverable	Water	3005A	
280-149165-4	MW-22s	Total Recoverable	Water	3005A	
280-149165-5	MW-20s	Total Recoverable	Water	3005A	
280-149165-6	MW-24s	Total Recoverable	Water	3005A	
280-149165-7	MW-19s	Total Recoverable	Water	3005A	
280-149165-8	MW-18s	Total Recoverable	Water	3005A	
280-149165-9	MW-21s	Total Recoverable	Water	3005A	
280-149165-10	DUP	Total Recoverable	Water	3005A	
MB 280-539034/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-539034/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-149165-1 MS	MW-17s	Total Recoverable	Water	3005A	
280-149165-1 MSD	MW-17s	Total Recoverable	Water	3005A	

Prep Batch: 539057

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-4	MW-22s	Total/NA	Water	7470A	
280-149165-6	MW-24s	Total/NA	Water	7470A	
280-149165-9	MW-21s	Total/NA	Water	7470A	
280-149165-10	DUP	Total/NA	Water	7470A	
MB 280-539057/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-539057/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-539057/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Analysis Batch: 539494

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-1	MW-17s	Total Recoverable	Water	6010C	539034
280-149165-3	MW-15s	Total Recoverable	Water	6010C	539034
280-149165-4	MW-22s	Total Recoverable	Water	6010C	539034
280-149165-5	MW-20s	Total Recoverable	Water	6010C	539034
280-149165-6	MW-24s	Total Recoverable	Water	6010C	539034
280-149165-7	MW-19s	Total Recoverable	Water	6010C	539034

Metals (Continued)

Analysis Batch: 539494 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-8	MW-18s	Total Recoverable	Water	6010C	539034
280-149165-9	MW-21s	Total Recoverable	Water	6010C	539034
280-149165-10	DUP	Total Recoverable	Water	6010C	539034
MB 280-539034/1-A	Method Blank	Total Recoverable	Water	6010C	539034
LCS 280-539034/2-A	Lab Control Sample	Total Recoverable	Water	6010C	539034
280-149165-1 MS	MW-17s	Total Recoverable	Water	6010C	539034
280-149165-1 MSD	MW-17s	Total Recoverable	Water	6010C	539034

Analysis Batch: 539623

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-4	MW-22s	Total/NA	Water	7470A	539057
280-149165-6	MW-24s	Total/NA	Water	7470A	539057
280-149165-9	MW-21s	Total/NA	Water	7470A	539057
280-149165-10	DUP	Total/NA	Water	7470A	539057
MB 280-539057/1-A	Method Blank	Total/NA	Water	7470A	539057
LCS 280-539057/2-A	Lab Control Sample	Total/NA	Water	7470A	539057
LCSD 280-539057/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	539057

Prep Batch: 541058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-2	MW-16s	Total Recoverable	Water	3005A	
280-149165-4	MW-22s	Total Recoverable	Water	3005A	
280-149165-6	MW-24s	Total Recoverable	Water	3005A	
280-149165-9	MW-21s	Total Recoverable	Water	3005A	
280-149165-10	DUP	Total Recoverable	Water	3005A	
MB 280-541058/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-541058/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-149165-2 MS	MW-16s	Total Recoverable	Water	3005A	
280-149165-2 MSD	MW-16s	Total Recoverable	Water	3005A	

Analysis Batch: 541298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-2	MW-16s	Total Recoverable	Water	6010C	541058
280-149165-4	MW-22s	Total Recoverable	Water	6010C	541058
280-149165-6	MW-24s	Total Recoverable	Water	6010C	541058
280-149165-9	MW-21s	Total Recoverable	Water	6010C	541058
280-149165-10	DUP	Total Recoverable	Water	6010C	541058
MB 280-541058/1-A	Method Blank	Total Recoverable	Water	6010C	541058
LCS 280-541058/2-A	Lab Control Sample	Total Recoverable	Water	6010C	541058
280-149165-2 MS	MW-16s	Total Recoverable	Water	6010C	541058
280-149165-2 MSD	MW-16s	Total Recoverable	Water	6010C	541058

General Chemistry

Analysis Batch: 538102

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-1	MW-17s	Total/NA	Water	SM 2540C	
280-149165-2	MW-16s	Total/NA	Water	SM 2540C	
280-149165-3	MW-15s	Total/NA	Water	SM 2540C	
280-149165-4	MW-22s	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 538102 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-5	MW-20s	Total/NA	Water	SM 2540C	
280-149165-6	MW-24s	Total/NA	Water	SM 2540C	
280-149165-7	MW-19s	Total/NA	Water	SM 2540C	
280-149165-8	MW-18s	Total/NA	Water	SM 2540C	
280-149165-9	MW-21s	Total/NA	Water	SM 2540C	
280-149165-10	DUP	Total/NA	Water	SM 2540C	
MB 280-538102/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-538102/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 539761

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-149165-1	MW-17s	Total/NA	Water	9056A	
280-149165-1	MW-17s	Total/NA	Water	9056A	
280-149165-2	MW-16s	Total/NA	Water	9056A	
280-149165-3	MW-15s	Total/NA	Water	9056A	
280-149165-3	MW-15s	Total/NA	Water	9056A	
280-149165-4	MW-22s	Total/NA	Water	9056A	
280-149165-4	MW-22s	Total/NA	Water	9056A	
280-149165-5	MW-20s	Total/NA	Water	9056A	
280-149165-6	MW-24s	Total/NA	Water	9056A	
280-149165-7	MW-19s	Total/NA	Water	9056A	
280-149165-7	MW-19s	Total/NA	Water	9056A	
280-149165-8	MW-18s	Total/NA	Water	9056A	
280-149165-8	MW-18s	Total/NA	Water	9056A	
280-149165-9	MW-21s	Total/NA	Water	9056A	
280-149165-9	MW-21s	Total/NA	Water	9056A	
280-149165-10	DUP	Total/NA	Water	9056A	
280-149165-10	DUP	Total/NA	Water	9056A	
MB 280-539761/6	Method Blank	Total/NA	Water	9056A	
LCS 280-539761/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-539761/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-539761/3	Lab Control Sample	Total/NA	Water	9056A	
280-149165-5 MS	MW-20s	Total/NA	Water	9056A	
280-149165-5 MSD	MW-20s	Total/NA	Water	9056A	
280-149165-5 DU	MW-20s	Total/NA	Water	9056A	

Lab Chronicle

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-2
SDG: BEPC AVS LANDFILL

Client Sample ID: MW-17s
Date Collected: 05/25/21 10:35
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	539034	06/10/21 07:47	MAB	TAL DEN
Total Recoverable	Analysis	6010C		1			539494	06/10/21 19:55	LMT	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	539761	06/14/21 19:39	CJ	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	539761	06/14/21 19:53	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	538102	06/01/21 09:58	LRB	TAL DEN

Client Sample ID: MW-16s
Date Collected: 05/25/21 10:15
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	541058	06/24/21 10:30	NK	TAL DEN
Total Recoverable	Analysis	6010C		1			541298	06/25/21 12:09	LMT	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	539761	06/14/21 20:38	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	538102	06/01/21 09:58	LRB	TAL DEN

Client Sample ID: MW-15s
Date Collected: 05/25/21 09:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	539034	06/10/21 07:47	MAB	TAL DEN
Total Recoverable	Analysis	6010C		1			539494	06/10/21 20:28	LMT	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	539761	06/14/21 21:08	CJ	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	539761	06/14/21 21:23	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	538102	06/01/21 09:58	LRB	TAL DEN

Client Sample ID: MW-22s
Date Collected: 05/24/21 14:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	541058	06/24/21 10:30	NK	TAL DEN
Total Recoverable	Analysis	6010C		1			541298	06/25/21 12:39	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	539034	06/10/21 07:47	MAB	TAL DEN
Total Recoverable	Analysis	6010C		1			539494	06/10/21 20:32	LMT	TAL DEN
Total/NA	Prep	3020A			50 mL	50 mL	538556	06/04/21 16:05	EC	TAL DEN
Total/NA	Analysis	6020A		1			538827	06/06/21 19:39	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	539057	06/11/21 16:00	NK	TAL DEN
Total/NA	Analysis	7470A		1			539623	06/11/21 19:47	NK	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	539761	06/14/21 21:38	CJ	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	539761	06/14/21 21:53	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	538102	06/01/21 09:58	LRB	TAL DEN

Lab Chronicle

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-2
SDG: BEPC AVS LANDFILL

Client Sample ID: MW-20s
Date Collected: 05/25/21 09:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	539034	06/10/21 07:47	MAB	TAL DEN
Total Recoverable	Analysis	6010C		1			539494	06/10/21 20:36	LMT	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	539761	06/14/21 22:08	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	538102	06/01/21 09:58	LRB	TAL DEN

Client Sample ID: MW-24s
Date Collected: 05/25/21 12:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	541058	06/24/21 10:30	NK	TAL DEN
Total Recoverable	Analysis	6010C		1			541298	06/25/21 12:46	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	539034	06/10/21 07:47	MAB	TAL DEN
Total Recoverable	Analysis	6010C		1			539494	06/10/21 20:40	LMT	TAL DEN
Total/NA	Prep	3020A			50 mL	50 mL	538556	06/04/21 16:05	EC	TAL DEN
Total/NA	Analysis	6020A		1			538827	06/06/21 19:42	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	539057	06/11/21 16:00	NK	TAL DEN
Total/NA	Analysis	7470A		1			539623	06/11/21 19:49	NK	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	539761	06/15/21 00:37	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	538102	06/01/21 09:58	LRB	TAL DEN

Client Sample ID: MW-19s
Date Collected: 05/26/21 09:25
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	539034	06/10/21 07:47	MAB	TAL DEN
Total Recoverable	Analysis	6010C		1			539494	06/10/21 20:44	LMT	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	539761	06/15/21 01:07	CJ	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	539761	06/15/21 01:22	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	538102	06/01/21 09:58	LRB	TAL DEN

Client Sample ID: MW-18s
Date Collected: 05/26/21 11:05
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	539034	06/10/21 07:47	MAB	TAL DEN
Total Recoverable	Analysis	6010C		1			539494	06/10/21 20:47	LMT	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	539761	06/15/21 01:37	CJ	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	539761	06/15/21 01:52	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	538102	06/01/21 09:58	LRB	TAL DEN

Lab Chronicle

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-2
SDG: BEPC AVS LANDFILL

Client Sample ID: MW-21s

Date Collected: 05/26/21 12:30
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	541058	06/24/21 10:30	NK	TAL DEN
Total Recoverable	Analysis	6010C		1			541298	06/25/21 12:56	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	539034	06/10/21 07:47	MAB	TAL DEN
Total Recoverable	Analysis	6010C		1			539494	06/10/21 20:51	LMT	TAL DEN
Total/NA	Prep	3020A			50 mL	50 mL	538556	06/04/21 16:05	EC	TAL DEN
Total/NA	Analysis	6020A		1			538827	06/06/21 19:46	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	539057	06/11/21 16:00	NK	TAL DEN
Total/NA	Analysis	7470A		1			539623	06/11/21 19:57	NK	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	539761	06/15/21 02:36	CJ	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	539761	06/15/21 02:51	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	538102	06/01/21 09:58	LRB	TAL DEN

Client Sample ID: DUP

Date Collected: 05/26/21 00:00
Date Received: 05/28/21 09:45

Lab Sample ID: 280-149165-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	541058	06/24/21 10:30	NK	TAL DEN
Total Recoverable	Analysis	6010C		1			541298	06/25/21 12:59	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	539034	06/10/21 07:47	MAB	TAL DEN
Total Recoverable	Analysis	6010C		1			539494	06/10/21 20:55	LMT	TAL DEN
Total/NA	Prep	3020A			50 mL	50 mL	538556	06/04/21 16:05	EC	TAL DEN
Total/NA	Analysis	6020A		1			538827	06/06/21 19:50	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	539057	06/11/21 16:00	NK	TAL DEN
Total/NA	Analysis	7470A		1			539623	06/11/21 20:00	NK	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	539761	06/15/21 03:06	CJ	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	539761	06/15/21 03:21	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	538102	06/01/21 09:58	LRB	TAL DEN

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- BEPC AVS LANDFILL

Job ID: 280-149165-2
SDG: BEPC AVS LANDFILL

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
North Dakota	State	R-034	01-08-22

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

280-149165 Chain of Custody

Eurofins | Environment Testing America

Client Information	Sampler: AARON Knutson	Lab PM: Turner, Shelby R	
Client Contact: Mr. Kevin Solie	Phone: 701-745-7238	E-Mail: Shelby.Turner@Eurofinset.com	
Company: Basin Electric Power Cooperative			
Address: 1717 East Interstate Avenue	Due Date Requested:		
City: Bismarck	TAT Requested (days): STANDARD		
State, Zip: ND, 58503			
Phone: 701-202-5096(Tel)	PO #: Purchase Order Requested		
Email: ksolie@bepc.com	WO #:		
Project Name: CCR Groundwater - North Dakota Site	Project #: 28021258		
Site: BEPC AVS LANDFILL	SSOW#:		

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C - Total B, Ca, Li (1 of 3), 6020A - Total 11 Metals (2 of 3), 7470A - Total Mercury (3 of 3) (APP III + IV)	2540C_Calcd - TDS	9056A_28D - Chloride, Fluoride, Sulfate	9315_Ra226, 9320_Ra226, Combined Radium-226 and Radium-228	6010C - Total Calcium and Boron	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N			D		
MW-17s	5-25-21	1035	G	Water	N			X	X		X		pH - 7.87
MW-16s	5-25-21	1015	G	Water	N			X	X		X		pH - 8.72
MW-15s	5-25-21	0900	G	Water	N			X	X		X		pH - 7.77
MW-22s	5-24-21	1430	G	Water	N		X	X	X	X	X		pH - 7.99
MW-20s	5-25-21	0930	G	Water	N			X	X		X		pH - 7.84
MW-24s	5-25-21	1200	G	Water	N		X	X	X	X	X		pH - 7.80
MW-19s	5-26-21	0925	G	Water	N			X	X		X		pH - 7.87
MW-18s	5-26-21	1105	G	Water	N			X	X		X		pH - 9.09
MW-21s	5-26-21	1230	G	Water	N		X	X	X	X	X		pH - 7.83
DUP			G	Water	N								
				Water									

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Job #:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by:	Date/Time: 5-27-21	Company: BEPC	Received by: Jot
Relinquished by:	Date/Time:	Company:	Received by:
Relinquished by:	Date/Time:	Company:	Received by:

Received by: Jot	Date/Time: 05/28/2021 0945	Company: ETADEN	
Received by:	Date/Time:	Company:	
Received by:	Date/Time:	Company:	

Custody Seals Intact: △ Yes △ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 1.9, 0.1 IR11 +0.4

Ver: 01/16/2019

0.1

ORIGIN ID:BISA (701) 745-3371
LELAND OLDS STATION
BASIN ELECTRIC
3901 HWY 200A

STANTON, ND 58571
UNITED STATES US

SHIP DATE: 27MAY21
ACTWGT: 53.00 LB
CAD: 251286197/INET43

BILL SENDER

TO SHELBY TURNER
EUROFINS TESTAMERICA, DENVER
4955 YARROW ST

ARVADA CO 80002
(303) 736-0100 REF CCR GROUNDWATER - ND SITE
INV
PO DEPT

280-149165 Waybill

FedEx Ship Manager - Print Your Label(s)

1 of 2

TRK# 0201 7738 4062 5640

MASTER

FRI - 28 MAY
PRIORITY OVER

XH LAAA

CO-US

5/27/2021

Cust

DATE

SIGNATURE

eurofins

1553032

650 4 10:30 E

Job ID: 280-144231-1

650

ORIGIN ID:BISA (701) 745-3371
LELAND OLDS STATION
BASIN ELECTRIC
3901 HWY 200A

STANTON, ND 58571
UNITED STATES US

SHIP DATE: 27MAY21
ACTWGT: 54.00 LB
CAD: 25128619/INET4340

BILL SENDER

TO SHELBY TURNER
EUROFINS TESTAMERICA, DENVER
4955 YARROW ST

ARVADA CO 80002
(303) 736-0100
INV
PO

REF: CCR GROUNDWATER - ND SITE

DEPT

56DJ3/710C/FE4A

FedEx Express

2 of 2
MPS# 0263 7738 4062 5559
Mstr# 7738 4062 5640

FRI - 28 MAY 10:30A
PRIORITY OVERNIGHT

0201

XH LAAA

80002
CO-US DEN

FedEx Ship Manager - Print Your Label(s)

5/27/2021

eurofins | Environment Testing TestAmerica

1553033

SIGN

DATE

Login Sample Receipt Checklist

Client: Basin Electric Power Cooperative

Job Number: 280-149165-2
SDG Number: BEPC AVS LANDFILL

Login Number: 149165
List Number: 1
Creator: Pottruff, Reed W

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

Laboratory Job ID: 280-153679-2
Laboratory Sample Delivery Group: AVS Landfill
Client Project/Site: CCR Groundwater - ND Sites- AVS Landfill

For:
Basin Electric Power Cooperative
1717 E Interstate Ave
Bismarck, North Dakota 58504

Attn: Aaron Knutson

Shelby Turner

Authorized for release by:
10/13/2021 1:29:22 PM

Shelby Turner, Project Manager I
(303)736-0100
Shelby.Turner@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-153679-2
SDG: AVS Landfill

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 280-153679-2

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: Basin Electric Power Cooperative

Project: CCR Groundwater - ND Sites- AVS Landfill

Report Number: 280-153679-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 10/2/2021 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6º C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): DUPLICATE (280-153679-4). The container labels list DUP, while the COC lists Duplicate. Sample ID was logged per the COC.

1 x 1 Liter poly unpreserved container for the following sample was received filled with 900mL of volume: MW 21S (280-153679-3). Sufficient volume is available for the requested analysis.

1 x 1 Liter poly unpreserved container for the following sample was received filled with 900mL of volume and 1 x 1 Liter poly Nitric Acid container was received filled with 950mL of volume: DUPLICATE (280-153679-4). Sufficient volume is available for the requested analyses.

TOTAL RECOVERABLE METALS

Samples MW 24S (280-153679-1), MW 22S (280-153679-2), MW 21S (280-153679-3) and DUPLICATE (280-153679-4) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/05/2021 and analyzed on 10/06/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL METALS (ICPMS)

Samples MW 24S (280-153679-1), MW 22S (280-153679-2), MW 21S (280-153679-3) and DUPLICATE (280-153679-4) were analyzed for total metals (ICPMS) in accordance with EPA SW-846 6020A. The samples were prepared on 10/04/2021 and analyzed on 10/12/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY

Samples MW 24S (280-153679-1), MW 22S (280-153679-2), MW 21S (280-153679-3) and DUPLICATE (280-153679-4) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 10/08/2021.

Job ID: 280-153679-2 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS

Samples MW 24S (280-153679-1), MW 22S (280-153679-2), MW 21S (280-153679-3) and DUPLICATE (280-153679-4) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 10/03/2021 and 10/06/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)

Samples MW 24S (280-153679-1), MW 22S (280-153679-2), MW 21S (280-153679-3) and DUPLICATE (280-153679-4) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A (28 Days). The samples were analyzed on 10/06/2021.

Samples MW 22S (280-153679-2)[5X], MW 21S (280-153679-3)[5X] and DUPLICATE (280-153679-4)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-153679-2
SDG: AVS Landfill

Client Sample ID: MW 24S — Lab Sample ID: 280-153679-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	134		100		ug/L	1		6010C	Total Recoverable
Calcium	5080		200		ug/L	1		6010C	Total Recoverable
Lithium	87.8		20.0		ug/L	1		6010C	Total Recoverable
Barium	71.2		1.00		ug/L	1		6020A	Total/NA
Cobalt	1.28		1.00		ug/L	1		6020A	Total/NA
Molybdenum	10.3		2.00		ug/L	1		6020A	Total/NA
Chloride	49.5		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.33		0.500		mg/L	1		9056A	Total/NA
Sulfate	45.3		5.00		mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	1610		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW 22S — Lab Sample ID: 280-153679-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	152		100		ug/L	1		6010C	Total Recoverable
Calcium	6470		200		ug/L	1		6010C	Total Recoverable
Lithium	40.2		20.0		ug/L	1		6010C	Total Recoverable
Barium	53.2		1.00		ug/L	1		6020A	Total/NA
Chloride	10.1		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.61		0.500		mg/L	1		9056A	Total/NA
Sulfate	260		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1610		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW 21S — Lab Sample ID: 280-153679-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	151		100		ug/L	1		6010C	Total Recoverable
Calcium	6270		200		ug/L	1		6010C	Total Recoverable
Lithium	41.1		20.0		ug/L	1		6010C	Total Recoverable
Barium	52.3		1.00		ug/L	1		6020A	Total/NA
Molybdenum	5.27		2.00		ug/L	1		6020A	Total/NA
Chloride	16.6		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.34		0.500		mg/L	1		9056A	Total/NA
Sulfate	719		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	2160		40.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: DUPLICATE — Lab Sample ID: 280-153679-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	154		100		ug/L	1		6010C	Total Recoverable
Calcium	2670		200		ug/L	1		6010C	Total Recoverable
Lithium	51.5		20.0		ug/L	1		6010C	Total Recoverable
Barium	50.5		1.00		ug/L	1		6020A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DUPLICATE (Continued)

Lab Sample ID: 280-153679-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	5.67		2.00		ug/L	1		6020A	Total/NA
Chloride	16.9		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.32		0.500		mg/L	1		9056A	Total/NA
Sulfate	769		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	2690		40.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-153679-2
SDG: AVS Landfill

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL DEN
6020A	Metals (ICP/MS)	SW846	TAL DEN
7470A	Mercury (CVAA)	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL DEN
3020A	Preparation, Total Metals	SW846	TAL DEN
7470A	Preparation, Mercury	SW846	TAL DEN

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-153679-2
SDG: AVS Landfill

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-153679-1	MW 24S	Water	09/29/21 09:40	10/02/21 09:45
280-153679-2	MW 22S	Water	09/29/21 11:10	10/02/21 09:45
280-153679-3	MW 21S	Water	09/29/21 12:25	10/02/21 09:45
280-153679-4	DUPLICATE	Water	09/29/21 00:00	10/02/21 09:45

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW 24S
Date Collected: 09/29/21 09:40
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**134**		100		ug/L		10/05/21 08:15	10/06/21 01:58	1
Calcium	**5080**		200		ug/L		10/05/21 08:15	10/06/21 01:58	1
Lithium	**87.8**		20.0		ug/L		10/05/21 08:15	10/06/21 01:58	1

Client Sample ID: MW 22S
Date Collected: 09/29/21 11:10
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**152**		100		ug/L		10/05/21 08:15	10/06/21 02:01	1
Calcium	**6470**		200		ug/L		10/05/21 08:15	10/06/21 02:01	1
Lithium	**40.2**		20.0		ug/L		10/05/21 08:15	10/06/21 02:01	1

Client Sample ID: MW 21S
Date Collected: 09/29/21 12:25
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**151**		100		ug/L		10/05/21 08:15	10/06/21 02:04	1
Calcium	**6270**		200		ug/L		10/05/21 08:15	10/06/21 02:04	1
Lithium	**41.1**		20.0		ug/L		10/05/21 08:15	10/06/21 02:04	1

Client Sample ID: DUPLICATE
Date Collected: 09/29/21 00:00
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**154**		100		ug/L		10/05/21 08:15	10/06/21 02:08	1
Calcium	**2670**		200		ug/L		10/05/21 08:15	10/06/21 02:08	1
Lithium	**51.5**		20.0		ug/L		10/05/21 08:15	10/06/21 02:08	1

Method: 6020A - Metals (ICP/MS)

Client Sample ID: MW 24S
Date Collected: 09/29/21 09:40
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:21	1
Arsenic	ND		5.00		ug/L		10/04/21 14:32	10/12/21 09:21	1
Barium	**71.2**		1.00		ug/L		10/04/21 14:32	10/12/21 09:21	1
Beryllium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:21	1
Cadmium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:21	1
Chromium	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:21	1
Cobalt	**1.28**		1.00		ug/L		10/04/21 14:32	10/12/21 09:21	1
Lead	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:21	1
Molybdenum	**10.3**		2.00		ug/L		10/04/21 14:32	10/12/21 09:21	1
Selenium	ND		5.00		ug/L		10/04/21 14:32	10/12/21 09:21	1
Thallium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:21	1

Client Sample ID: MW 22S
Date Collected: 09/29/21 11:10
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:25	1

Method: 6020A - Metals (ICP/MS) (Continued)

Client Sample ID: MW 22S
Date Collected: 09/29/21 11:10
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.00		ug/L		10/04/21 14:32	10/12/21 09:25	1
Barium	**53.2**		1.00		ug/L		10/04/21 14:32	10/12/21 09:25	1
Beryllium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:25	1
Cadmium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:25	1
Chromium	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:25	1
Cobalt	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:25	1
Lead	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:25	1
Molybdenum	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:25	1
Selenium	ND		5.00		ug/L		10/04/21 14:32	10/12/21 09:25	1
Thallium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:25	1

Client Sample ID: MW 21S
Date Collected: 09/29/21 12:25
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:47	1
Arsenic	ND		5.00		ug/L		10/04/21 14:32	10/12/21 09:47	1
Barium	**52.3**		1.00		ug/L		10/04/21 14:32	10/12/21 09:47	1
Beryllium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:47	1
Cadmium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:47	1
Chromium	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:47	1
Cobalt	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:47	1
Lead	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:47	1
Molybdenum	**5.27**		2.00		ug/L		10/04/21 14:32	10/12/21 09:47	1
Selenium	ND		5.00		ug/L		10/04/21 14:32	10/12/21 09:47	1
Thallium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:47	1

Client Sample ID: DUPLICATE
Date Collected: 09/29/21 00:00
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:51	1
Arsenic	ND		5.00		ug/L		10/04/21 14:32	10/12/21 09:51	1
Barium	**50.5**		1.00		ug/L		10/04/21 14:32	10/12/21 09:51	1
Beryllium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:51	1
Cadmium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:51	1
Chromium	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:51	1
Cobalt	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:51	1
Lead	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:51	1
Molybdenum	**5.67**		2.00		ug/L		10/04/21 14:32	10/12/21 09:51	1
Selenium	ND		5.00		ug/L		10/04/21 14:32	10/12/21 09:51	1
Thallium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:51	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW 24S
Date Collected: 09/29/21 09:40
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		10/08/21 12:45	10/08/21 17:45	1

Method: 7470A - Mercury (CVAA)

Client Sample ID: MW 22S
Date Collected: 09/29/21 11:10
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		10/08/21 12:45	10/08/21 17:48	1

Client Sample ID: MW 21S
Date Collected: 09/29/21 12:25
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		10/08/21 12:45	10/08/21 17:50	1

Client Sample ID: DUPLICATE
Date Collected: 09/29/21 00:00
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		10/08/21 12:45	10/08/21 17:53	1

General Chemistry

Client Sample ID: MW 24S
Date Collected: 09/29/21 09:40
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	49.5		3.00		mg/L			10/06/21 03:11	1
Fluoride	1.33		0.500		mg/L			10/06/21 03:11	1
Sulfate	45.3		5.00		mg/L			10/06/21 03:11	1
Total Dissolved Solids (TDS)	1610		20.0		mg/L			10/06/21 08:31	1

Client Sample ID: MW 22S
Date Collected: 09/29/21 11:10
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	10.1		3.00		mg/L			10/06/21 03:39	1
Fluoride	1.61		0.500		mg/L			10/06/21 03:39	1
Sulfate	260		25.0		mg/L			10/06/21 03:53	5
Total Dissolved Solids (TDS)	1610		20.0		mg/L			10/06/21 08:31	1

Client Sample ID: MW 21S
Date Collected: 09/29/21 12:25
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16.6		3.00		mg/L			10/06/21 04:07	1
Fluoride	1.34		0.500		mg/L			10/06/21 04:07	1
Sulfate	719		25.0		mg/L			10/06/21 04:21	5
Total Dissolved Solids (TDS)	2160		40.0		mg/L			10/06/21 08:31	1

Client Sample ID: DUPLICATE
Date Collected: 09/29/21 00:00
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16.9		3.00		mg/L			10/06/21 04:36	1
Fluoride	1.32		0.500		mg/L			10/06/21 04:36	1
Sulfate	769		25.0		mg/L			10/06/21 04:50	5
Total Dissolved Solids (TDS)	2690		40.0		mg/L			10/03/21 11:08	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 280-552184/1-A
Matrix: Water
Analysis Batch: 552489

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 552184

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		100		ug/L		10/05/21 08:15	10/06/21 01:37	1
Calcium	ND		200		ug/L		10/05/21 08:15	10/06/21 01:37	1
Lithium	ND		20.0		ug/L		10/05/21 08:15	10/06/21 01:37	1

Lab Sample ID: LCS 280-552184/2-A
Matrix: Water
Analysis Batch: 552489

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 552184

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	1014		ug/L		101	86 - 110
Calcium	50000	50600		ug/L		101	90 - 111
Lithium	1000	1003		ug/L		100	90 - 112

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 280-552110/1-A
Matrix: Water
Analysis Batch: 553225

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 552110

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:13	1
Arsenic	ND		5.00		ug/L		10/04/21 14:32	10/12/21 09:13	1
Barium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:13	1
Beryllium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:13	1
Cadmium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:13	1
Chromium	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:13	1
Cobalt	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:13	1
Lead	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:13	1
Molybdenum	ND		2.00		ug/L		10/04/21 14:32	10/12/21 09:13	1
Selenium	ND		5.00		ug/L		10/04/21 14:32	10/12/21 09:13	1
Thallium	ND		1.00		ug/L		10/04/21 14:32	10/12/21 09:13	1

Lab Sample ID: LCS 280-552110/2-A
Matrix: Water
Analysis Batch: 553225

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 552110

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	40.0	36.01		ug/L		90	85 - 115
Arsenic	40.0	40.06		ug/L		100	85 - 117
Barium	40.0	38.88		ug/L		97	85 - 118
Beryllium	40.0	38.78		ug/L		97	80 - 125
Cadmium	40.0	40.60		ug/L		101	85 - 115
Chromium	40.0	43.25		ug/L		108	84 - 121
Cobalt	40.0	39.80		ug/L		100	85 - 120
Lead	40.0	40.56		ug/L		101	85 - 118
Molybdenum	40.0	40.62		ug/L		102	85 - 119
Selenium	40.0	39.93		ug/L		100	77 - 122
Thallium	40.0	39.80		ug/L		100	85 - 118

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 280-153679-2 MS
Matrix: Water
Analysis Batch: 553225

Client Sample ID: MW 22S
Prep Type: Total/NA
Prep Batch: 552110

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		40.0	38.58		ug/L		96	85 - 115
Arsenic	ND		40.0	40.29		ug/L		101	85 - 117
Barium	53.2		40.0	99.00		ug/L		114	85 - 118
Beryllium	ND		40.0	42.25		ug/L		105	80 - 125
Cadmium	ND		40.0	40.34		ug/L		101	85 - 115
Chromium	ND		40.0	40.81		ug/L		100	84 - 121
Cobalt	ND		40.0	39.20		ug/L		97	85 - 120
Lead	ND		40.0	38.04		ug/L		95	85 - 118
Molybdenum	ND		40.0	41.53		ug/L		102	85 - 119
Selenium	ND		40.0	38.50		ug/L		96	77 - 122
Thallium	ND		40.0	37.38		ug/L		93	85 - 118

Lab Sample ID: 280-153679-2 MSD
Matrix: Water
Analysis Batch: 553225

Client Sample ID: MW 22S
Prep Type: Total/NA
Prep Batch: 552110

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		40.0	39.58		ug/L		99	85 - 115	3	20
Arsenic	ND		40.0	39.83		ug/L		100	85 - 117	1	20
Barium	53.2		40.0	95.51		ug/L		106	85 - 118	4	20
Beryllium	ND		40.0	44.07		ug/L		110	80 - 125	4	20
Cadmium	ND		40.0	39.54		ug/L		99	85 - 115	2	20
Chromium	ND		40.0	42.59		ug/L		105	84 - 121	4	20
Cobalt	ND		40.0	38.33		ug/L		95	85 - 120	2	20
Lead	ND		40.0	38.75		ug/L		97	85 - 118	2	20
Molybdenum	ND		40.0	42.31		ug/L		104	85 - 119	2	20
Selenium	ND		40.0	40.44		ug/L		101	77 - 122	5	20
Thallium	ND		40.0	37.66		ug/L		94	85 - 118	1	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-552583/1-A
Matrix: Water
Analysis Batch: 552938

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 552583

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		10/08/21 12:45	10/08/21 16:52	1

Lab Sample ID: LCS 280-552583/2-A
Matrix: Water
Analysis Batch: 552938

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 552583

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.004970		mg/L		99	84 - 120

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCSD 280-552583/3-A
Matrix: Water
Analysis Batch: 552938

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 552583

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.00500	0.004480		mg/L		90	84 - 120	10	15

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-552193/46
Matrix: Water
Analysis Batch: 552193

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.00		mg/L			10/05/21 21:49	1
Fluoride	ND		0.500		mg/L			10/05/21 21:49	1
Sulfate	ND		5.00		mg/L			10/05/21 21:49	1

Lab Sample ID: MB 280-552193/6
Matrix: Water
Analysis Batch: 552193

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.00		mg/L			10/04/21 16:13	1
Fluoride	ND		0.500		mg/L			10/04/21 16:13	1
Sulfate	ND		5.00		mg/L			10/04/21 16:13	1

Lab Sample ID: LCS 280-552193/44
Matrix: Water
Analysis Batch: 552193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			100	97.45		mg/L		97	90 - 110		
Fluoride			5.00	5.019		mg/L		100	90 - 110		
Sulfate			100	97.72		mg/L		98	90 - 110		

Lab Sample ID: LCSD 280-552193/45
Matrix: Water
Analysis Batch: 552193

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride			100	97.37		mg/L		97	90 - 110	0	10
Fluoride			5.00	5.142		mg/L		103	90 - 110	2	10
Sulfate			100	97.54		mg/L		98	90 - 110	0	10

Lab Sample ID: MRL 280-552193/3
Matrix: Water
Analysis Batch: 552193

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			5.00	5.041		mg/L		101	50 - 150		
Fluoride			0.500	0.5541		mg/L		111	50 - 150		
Sulfate			5.00	ND		mg/L		98	50 - 150		

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-552081/1
Matrix: Water
Analysis Batch: 552081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10.0		mg/L			10/03/21 11:08	1

Lab Sample ID: LCS 280-552081/2
Matrix: Water
Analysis Batch: 552081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			503	500.0		mg/L		99	88 - 114		

Lab Sample ID: 280-153679-4 DU
Matrix: Water
Analysis Batch: 552081

Client Sample ID: DUPLICATE
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	2690			2812		mg/L				4	10

Lab Sample ID: MB 280-552469/1
Matrix: Water
Analysis Batch: 552469

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10.0		mg/L			10/06/21 08:31	1

Lab Sample ID: LCS 280-552469/2
Matrix: Water
Analysis Batch: 552469

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			503	482.0		mg/L		96	88 - 114		

Metals

Prep Batch: 552110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-153679-1	MW 24S	Total/NA	Water	3020A	
280-153679-2	MW 22S	Total/NA	Water	3020A	
280-153679-3	MW 21S	Total/NA	Water	3020A	
280-153679-4	DUPLICATE	Total/NA	Water	3020A	
MB 280-552110/1-A	Method Blank	Total/NA	Water	3020A	
LCS 280-552110/2-A	Lab Control Sample	Total/NA	Water	3020A	
280-153679-2 MS	MW 22S	Total/NA	Water	3020A	
280-153679-2 MSD	MW 22S	Total/NA	Water	3020A	

Prep Batch: 552184

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-153679-1	MW 24S	Total Recoverable	Water	3005A	
280-153679-2	MW 22S	Total Recoverable	Water	3005A	
280-153679-3	MW 21S	Total Recoverable	Water	3005A	
280-153679-4	DUPLICATE	Total Recoverable	Water	3005A	
MB 280-552184/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-552184/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 552489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-153679-1	MW 24S	Total Recoverable	Water	6010C	552184
280-153679-2	MW 22S	Total Recoverable	Water	6010C	552184
280-153679-3	MW 21S	Total Recoverable	Water	6010C	552184
280-153679-4	DUPLICATE	Total Recoverable	Water	6010C	552184
MB 280-552184/1-A	Method Blank	Total Recoverable	Water	6010C	552184
LCS 280-552184/2-A	Lab Control Sample	Total Recoverable	Water	6010C	552184

Prep Batch: 552583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-153679-1	MW 24S	Total/NA	Water	7470A	
280-153679-2	MW 22S	Total/NA	Water	7470A	
280-153679-3	MW 21S	Total/NA	Water	7470A	
280-153679-4	DUPLICATE	Total/NA	Water	7470A	
MB 280-552583/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-552583/2-A	Lab Control Sample	Total/NA	Water	7470A	
LCSD 280-552583/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	

Analysis Batch: 552938

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-153679-1	MW 24S	Total/NA	Water	7470A	552583
280-153679-2	MW 22S	Total/NA	Water	7470A	552583
280-153679-3	MW 21S	Total/NA	Water	7470A	552583
280-153679-4	DUPLICATE	Total/NA	Water	7470A	552583
MB 280-552583/1-A	Method Blank	Total/NA	Water	7470A	552583
LCS 280-552583/2-A	Lab Control Sample	Total/NA	Water	7470A	552583
LCSD 280-552583/3-A	Lab Control Sample Dup	Total/NA	Water	7470A	552583

Analysis Batch: 553225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-153679-1	MW 24S	Total/NA	Water	6020A	552110
280-153679-2	MW 22S	Total/NA	Water	6020A	552110

Metals (Continued)

Analysis Batch: 553225 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-153679-3	MW 21S	Total/NA	Water	6020A	552110
280-153679-4	DUPLICATE	Total/NA	Water	6020A	552110
MB 280-552110/1-A	Method Blank	Total/NA	Water	6020A	552110
LCS 280-552110/2-A	Lab Control Sample	Total/NA	Water	6020A	552110
280-153679-2 MS	MW 22S	Total/NA	Water	6020A	552110
280-153679-2 MSD	MW 22S	Total/NA	Water	6020A	552110

General Chemistry

Analysis Batch: 552081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-153679-4	DUPLICATE	Total/NA	Water	SM 2540C	
MB 280-552081/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-552081/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-153679-4 DU	DUPLICATE	Total/NA	Water	SM 2540C	

Analysis Batch: 552193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-153679-1	MW 24S	Total/NA	Water	9056A	
280-153679-2	MW 22S	Total/NA	Water	9056A	
280-153679-2	MW 22S	Total/NA	Water	9056A	
280-153679-3	MW 21S	Total/NA	Water	9056A	
280-153679-3	MW 21S	Total/NA	Water	9056A	
280-153679-4	DUPLICATE	Total/NA	Water	9056A	
280-153679-4	DUPLICATE	Total/NA	Water	9056A	
MB 280-552193/46	Method Blank	Total/NA	Water	9056A	
MB 280-552193/6	Method Blank	Total/NA	Water	9056A	
LCS 280-552193/44	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-552193/45	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-552193/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 552469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-153679-1	MW 24S	Total/NA	Water	SM 2540C	
280-153679-2	MW 22S	Total/NA	Water	SM 2540C	
280-153679-3	MW 21S	Total/NA	Water	SM 2540C	
MB 280-552469/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-552469/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Lab Chronicle

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-153679-2
SDG: AVS Landfill

Client Sample ID: MW 24S

Date Collected: 09/29/21 09:40
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	552184	10/05/21 08:15	ABW	TAL DEN
Total Recoverable	Analysis	6010C		1			552489	10/06/21 01:58	MAB	TAL DEN
Total/NA	Prep	3020A			50 mL	50 mL	552110	10/04/21 14:32	CJB	TAL DEN
Total/NA	Analysis	6020A		1			553225	10/12/21 09:21	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	552583	10/08/21 12:45	NK	TAL DEN
Total/NA	Analysis	7470A		1			552938	10/08/21 17:45	NK	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	552193	10/06/21 03:11	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	552469	10/06/21 08:31	LRB	TAL DEN

Client Sample ID: MW 22S

Date Collected: 09/29/21 11:10
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	552184	10/05/21 08:15	ABW	TAL DEN
Total Recoverable	Analysis	6010C		1			552489	10/06/21 02:01	MAB	TAL DEN
Total/NA	Prep	3020A			50 mL	50 mL	552110	10/04/21 14:32	CJB	TAL DEN
Total/NA	Analysis	6020A		1			553225	10/12/21 09:25	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	552583	10/08/21 12:45	NK	TAL DEN
Total/NA	Analysis	7470A		1			552938	10/08/21 17:48	NK	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	552193	10/06/21 03:39	CJ	TAL DEN
Total/NA	Analysis	9056A		5	10 mL	10 mL	552193	10/06/21 03:53	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	552469	10/06/21 08:31	LRB	TAL DEN

Client Sample ID: MW 21S

Date Collected: 09/29/21 12:25
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	552184	10/05/21 08:15	ABW	TAL DEN
Total Recoverable	Analysis	6010C		1			552489	10/06/21 02:04	MAB	TAL DEN
Total/NA	Prep	3020A			50 mL	50 mL	552110	10/04/21 14:32	CJB	TAL DEN
Total/NA	Analysis	6020A		1			553225	10/12/21 09:47	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	552583	10/08/21 12:45	NK	TAL DEN
Total/NA	Analysis	7470A		1			552938	10/08/21 17:50	NK	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	552193	10/06/21 04:07	CJ	TAL DEN
Total/NA	Analysis	9056A		5	10 mL	10 mL	552193	10/06/21 04:21	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	552469	10/06/21 08:31	LRB	TAL DEN

Lab Chronicle

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-153679-2
SDG: AVS Landfill

Client Sample ID: DUPLICATE

Date Collected: 09/29/21 00:00
Date Received: 10/02/21 09:45

Lab Sample ID: 280-153679-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	552184	10/05/21 08:15	ABW	TAL DEN
Total Recoverable	Analysis	6010C		1			552489	10/06/21 02:08	MAB	TAL DEN
Total/NA	Prep	3020A			50 mL	50 mL	552110	10/04/21 14:32	CJB	TAL DEN
Total/NA	Analysis	6020A		1			553225	10/12/21 09:51	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	552583	10/08/21 12:45	NK	TAL DEN
Total/NA	Analysis	7470A		1			552938	10/08/21 17:53	NK	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	552193	10/06/21 04:36	CJ	TAL DEN
Total/NA	Analysis	9056A		5	10 mL	10 mL	552193	10/06/21 04:50	CJ	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	552081	10/03/21 11:08	LRB	TAL DEN

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-153679-2
SDG: AVS Landfill

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
North Dakota	State	R-034	01-08-22

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: A. Knutson	Lab PM: Turner, Shelby R	Carrier Tracking No(s):	COC No:
Client Contact: Mr. Aaron Knutson	Phone: 701-745-7238	E-Mail: Shelby.Turner@Eurofinset.com		Page: 1 of 1
Company: Basin Electric Power Cooperative				Job #:

Address: 3901 Highway 200A	Due Date Requested:	Analysis Requested
City: Stanton	TAT Requested (days): Standard	
State, Zip: ND, 58571		
Phone: 701-745-7238(Tel)	PO #: Purchase Order Requested	
Email: aknutson@bepc.com	WO #:	
Project Name: CCR Groundwater - North Dakota Sites	Project #: 28021258	
Site: AVS LANDFILL	SSOW#:	

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C - Total Calcium and Boron (App III)	6010C - Total Lithium (1 of 3); 6020A - Total 11 Metals (2 of 3), 7470A - Total Mercury (3 of 3) (Appendix IV)	2540C_Calcd - TDS	9056A_28D - Chloride, Fluoride, Sulfate	9056A_28D - Fluoride only (App IV)	9315_Ra226, 9320_Ra228, Combined Radium-226 and Radium-228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	N	N	N	D		
MW 24 S	9-29-21	0940	G	W	N		X	X	X	X	X	X		pH - 8.03
MW 22 S	9-29-21	1110	G	W	N		X	X	X	X	X	X		- 7.97
MW 21 S	9-29-21	1225	G	W	N		X	X	X	X	X	X		7.90
Duplicate	9-29-21		G	W	N		X	X	X	X	X	X		

280-153679 Chain of Custody

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological	☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	10-1-21			10/2/21 0945	ETADEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☒ Yes △ No	Custody Seal No.: 1543672, 1543763	Cooler Temperature(s) °C and Other Remarks: 0.6 IR11 CF+1.0

Ver: 01/16/2019

280-153679 Waybill

ORIGIN ID:BISA (701) 745-3371
LELAND OLDS STATION
BASIN ELECTRIC
3901 HWY 200A

STANTON, ND 58571
UNITED STATES US

SHIP DATE: 01OCT21
ACTWGT: 60.00 LB
CAD: 251286197/INET4400

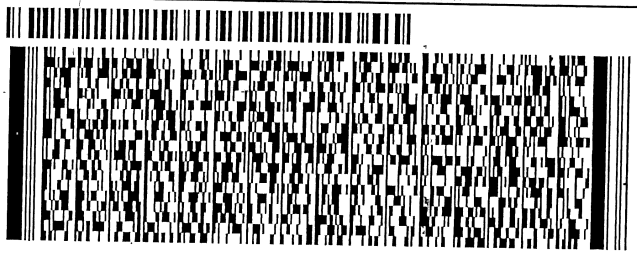
BILL SENDER

TO SHELBY TURNER
EUROFINS TESTAMERICA, DENVER
4955 YARROW ST

ARVADA CO 80002
(303) 736-0100
INV:
PO:

REF: CCR GROUNDWATER - ND SITE
DEPT:

56DJ3/169A/FE4A



FedEx Express

J212021070901uv

FedEx Ship Manager - Print Your Label(s)

SATURDAY 9:30A
FIRST OVERNIGHT

TRK# 0201 7748 5611 0180

X0 LAAA

80002
CO-US DEN

eurofins | Environment Testing TestAmerica

1543673

eurofins | Environment Testing TestAmerica

1543672

10/1/21, 7:39 AM

Login Sample Receipt Checklist

Client: Basin Electric Power Cooperative

Job Number: 280-153679-2
SDG Number: AVS Landfill

Login Number: 153679
List Number: 1
Creator: O'Hara, Jake F

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	False	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

Laboratory Job ID: 280-154176-1
Laboratory Sample Delivery Group: AVS Landfill
Client Project/Site: CCR Groundwater - ND Sites- AVS Landfill

For:
Basin Electric Power Cooperative
1717 E Interstate Ave
Bismarck, North Dakota 58504

Attn: Aaron Knutson

Shelby Turner

Authorized for release by:
11/2/2021 3:08:46 PM

Shelby Turner, Project Manager I
(303)736-0100
Shelby.Turner@Eurofinset.com

Table of Contents

Definitions/Glossary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

Qualifiers

General Chemistry

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 280-154176-1

Laboratory: Eurofins TestAmerica, Denver

Narrative

CASE NARRATIVE

Client: Basin Electric Power Cooperative

Project: CCR Groundwater - ND Sites- AVS Landfill

Report Number: 280-154176-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 10/14/2021 11:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.1º C.

Receipt Exceptions
The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): MW 16S (280-154176-2). There was no collection time documented on the 250mL unpreserved plastic container. The sample was logged per the COC.

TOTAL RECOVERABLE METALS
Samples MW 15S (280-154176-1), MW 16S (280-154176-2), MW 17S (280-154176-3), MW 20S (280-154176-4), MW 19S (280-154176-5), MW 18S (280-154176-6) and DUP (280-154176-7) were analyzed for Total Recoverable Metals in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/20/2021 and analyzed on 10/20/2021 and 10/21/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL DISSOLVED SOLIDS
Samples MW 15S (280-154176-1), MW 16S (280-154176-2), MW 17S (280-154176-3), MW 20S (280-154176-4), MW 19S (280-154176-5), MW 18S (280-154176-6) and DUP (280-154176-7) were analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 10/15/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (28 DAYS)
Samples MW 15S (280-154176-1), MW 16S (280-154176-2), MW 17S (280-154176-3), MW 20S (280-154176-4), MW 19S (280-154176-5), MW 18S (280-154176-6) and DUP (280-154176-7) were analyzed for anions (28 days) in accordance with EPA SW-846 Method 9056A (28 Days). The samples were analyzed on 11/01/2021.

Sulfate failed the recovery criteria high for the MS and MSD of sample DUP (280-154176-7) in batch 280-555711. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. Refer to the QC report for details.

Samples MW 15S (280-154176-1)[5X], MW 17S (280-154176-3)[5X], MW 19S (280-154176-5)[5X], MW 18S (280-154176-6)[5X] and DUP

Job ID: 280-154176-1 (Continued)

Laboratory: Eurofins TestAmerica, Denver (Continued)

(280-154176-7)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

Client Sample ID: MW 15S — Lab Sample ID: 280-154176-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	144		100		ug/L	1		6010C	Total Recoverable
Calcium	4040		200		ug/L	1		6010C	Total Recoverable
Chloride	8.16		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.62		0.500		mg/L	1		9056A	Total/NA
Sulfate	399		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1810		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW 16S — Lab Sample ID: 280-154176-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	176		100		ug/L	1		6010C	Total Recoverable
Calcium	3510		200		ug/L	1		6010C	Total Recoverable
Chloride	15.5		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.93		0.500		mg/L	1		9056A	Total/NA
Sulfate	71.6		5.00		mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	1050		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW 17S — Lab Sample ID: 280-154176-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	155		100		ug/L	1		6010C	Total Recoverable
Calcium	4220		200		ug/L	1		6010C	Total Recoverable
Chloride	8.92		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.56		0.500		mg/L	1		9056A	Total/NA
Sulfate	211		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1700		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW 20S — Lab Sample ID: 280-154176-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	154		100		ug/L	1		6010C	Total Recoverable
Calcium	6120		200		ug/L	1		6010C	Total Recoverable
Chloride	20.4		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.41		0.500		mg/L	1		9056A	Total/NA
Sulfate	66.6		5.00		mg/L	1		9056A	Total/NA
Total Dissolved Solids (TDS)	1810		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW 19S — Lab Sample ID: 280-154176-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	159		100		ug/L	1		6010C	Total Recoverable
Calcium	4110		200		ug/L	1		6010C	Total Recoverable
Chloride	12.0		3.00		mg/L	1		9056A	Total/NA
Fluoride	0.878		0.500		mg/L	1		9056A	Total/NA
Sulfate	781		25.0		mg/L	5		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Denver

Detection Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

Client Sample ID: MW 19S (Continued) — Lab Sample ID: 280-154176-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Dissolved Solids (TDS)	2090		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW 18S — Lab Sample ID: 280-154176-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	125		100		ug/L	1		6010C	Total Recoverable
Calcium	9580		200		ug/L	1		6010C	Total Recoverable
Chloride	4.38		3.00		mg/L	1		9056A	Total/NA
Fluoride	1.39		0.500		mg/L	1		9056A	Total/NA
Sulfate	401		25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	1650		20.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: DUP — Lab Sample ID: 280-154176-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	160		100		ug/L	1		6010C	Total Recoverable
Calcium	4130		200		ug/L	1		6010C	Total Recoverable
Chloride	11.9		3.00		mg/L	1		9056A	Total/NA
Fluoride	0.925		0.500		mg/L	1		9056A	Total/NA
Sulfate	766	F1	25.0		mg/L	5		9056A	Total/NA
Total Dissolved Solids (TDS)	2080		20.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL DEN

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-154176-1	MW 15S	Water	10/12/21 08:25	10/14/21 11:00
280-154176-2	MW 16S	Water	10/12/21 09:20	10/14/21 11:00
280-154176-3	MW 17S	Water	10/12/21 10:00	10/14/21 11:00
280-154176-4	MW 20S	Water	10/12/21 10:25	10/14/21 11:00
280-154176-5	MW 19S	Water	10/12/21 11:25	10/14/21 11:00
280-154176-6	MW 18S	Water	10/12/21 13:20	10/14/21 11:00
280-154176-7	DUP	Water	10/12/21 00:00	10/14/21 11:00

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: MW 15S
Date Collected: 10/12/21 08:25
Date Received: 10/14/21 11:00
Lab Sample ID: 280-154176-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	144		100		ug/L		10/20/21 07:58	10/20/21 23:50	1
Calcium	4040		200		ug/L		10/20/21 07:58	10/20/21 23:50	1

Client Sample ID: MW 16S
Date Collected: 10/12/21 09:20
Date Received: 10/14/21 11:00
Lab Sample ID: 280-154176-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	176		100		ug/L		10/20/21 07:58	10/20/21 23:54	1
Calcium	3510		200		ug/L		10/20/21 07:58	10/20/21 23:54	1

Client Sample ID: MW 17S
Date Collected: 10/12/21 10:00
Date Received: 10/14/21 11:00
Lab Sample ID: 280-154176-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	155		100		ug/L		10/20/21 07:58	10/20/21 23:57	1
Calcium	4220		200		ug/L		10/20/21 07:58	10/20/21 23:57	1

Client Sample ID: MW 20S
Date Collected: 10/12/21 10:25
Date Received: 10/14/21 11:00
Lab Sample ID: 280-154176-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	154		100		ug/L		10/20/21 07:58	10/21/21 00:00	1
Calcium	6120		200		ug/L		10/20/21 07:58	10/21/21 00:00	1

Client Sample ID: MW 19S
Date Collected: 10/12/21 11:25
Date Received: 10/14/21 11:00
Lab Sample ID: 280-154176-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	159		100		ug/L		10/20/21 07:58	10/21/21 00:04	1
Calcium	4110		200		ug/L		10/20/21 07:58	10/21/21 00:04	1

Client Sample ID: MW 18S
Date Collected: 10/12/21 13:20
Date Received: 10/14/21 11:00
Lab Sample ID: 280-154176-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	125		100		ug/L		10/20/21 07:58	10/21/21 00:07	1
Calcium	9580		200		ug/L		10/20/21 07:58	10/21/21 00:07	1

Client Sample ID: DUP
Date Collected: 10/12/21 00:00
Date Received: 10/14/21 11:00
Lab Sample ID: 280-154176-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	160		100		ug/L		10/20/21 07:58	10/21/21 00:10	1
Calcium	4130		200		ug/L		10/20/21 07:58	10/21/21 00:10	1

General Chemistry

Client Sample ID: MW 15S
Date Collected: 10/12/21 08:25
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.16		3.00		mg/L			11/01/21 18:02	1
Fluoride	1.62		0.500		mg/L			11/01/21 18:02	1
Sulfate	399		25.0		mg/L			11/01/21 18:17	5
Total Dissolved Solids (TDS)	1810		20.0		mg/L			10/15/21 09:31	1

Client Sample ID: MW 16S
Date Collected: 10/12/21 09:20
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	15.5		3.00		mg/L			11/01/21 18:32	1
Fluoride	1.93		0.500		mg/L			11/01/21 18:32	1
Sulfate	71.6		5.00		mg/L			11/01/21 18:32	1
Total Dissolved Solids (TDS)	1050		20.0		mg/L			10/15/21 09:31	1

Client Sample ID: MW 17S
Date Collected: 10/12/21 10:00
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.92		3.00		mg/L			11/01/21 19:02	1
Fluoride	1.56		0.500		mg/L			11/01/21 19:02	1
Sulfate	211		25.0		mg/L			11/01/21 19:17	5
Total Dissolved Solids (TDS)	1700		20.0		mg/L			10/15/21 09:31	1

Client Sample ID: MW 20S
Date Collected: 10/12/21 10:25
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	20.4		3.00		mg/L			11/01/21 19:32	1
Fluoride	1.41		0.500		mg/L			11/01/21 19:32	1
Sulfate	66.6		5.00		mg/L			11/01/21 19:32	1
Total Dissolved Solids (TDS)	1810		20.0		mg/L			10/15/21 09:34	1

Client Sample ID: MW 19S
Date Collected: 10/12/21 11:25
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12.0		3.00		mg/L			11/01/21 20:01	1
Fluoride	0.878		0.500		mg/L			11/01/21 20:01	1
Sulfate	781		25.0		mg/L			11/01/21 20:16	5
Total Dissolved Solids (TDS)	2090		20.0		mg/L			10/15/21 09:34	1

Client Sample ID: MW 18S
Date Collected: 10/12/21 13:20
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.38		3.00		mg/L			11/01/21 21:01	1
Fluoride	1.39		0.500		mg/L			11/01/21 21:01	1
Sulfate	401		25.0		mg/L			11/01/21 21:16	5
Total Dissolved Solids (TDS)	1650		20.0		mg/L			10/15/21 09:34	1

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

General Chemistry

Client Sample ID: DUP
Date Collected: 10/12/21 00:00
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	11.9		3.00		mg/L			11/01/21 21:31	1
Fluoride	0.925		0.500		mg/L			11/01/21 21:31	1
Sulfate	766	F1	25.0		mg/L			11/01/21 22:31	5
Total Dissolved Solids (TDS)	2080		20.0		mg/L			10/15/21 09:25	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 280-553704/1-A
Matrix: Water
Analysis Batch: 554534

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 553704

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		100		ug/L		10/20/21 07:58	10/20/21 23:06	1
Calcium	ND		200		ug/L		10/20/21 07:58	10/20/21 23:06	1

Lab Sample ID: LCS 280-553704/2-A
Matrix: Water
Analysis Batch: 554534

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 553704

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	996.1		ug/L		100	86 - 110
Calcium	50000	49070		ug/L		98	90 - 111

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-555711/6
Matrix: Water
Analysis Batch: 555711

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.00		mg/L			11/01/21 15:59	1
Fluoride	ND		0.500		mg/L			11/01/21 15:59	1
Sulfate	ND		5.00		mg/L			11/01/21 15:59	1

Lab Sample ID: LCS 280-555711/4
Matrix: Water
Analysis Batch: 555711

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	94.77		mg/L		95	90 - 110
Fluoride	5.00	4.994		mg/L		100	90 - 110
Sulfate	100	93.64		mg/L		94	90 - 110

Lab Sample ID: LCSD 280-555711/5
Matrix: Water
Analysis Batch: 555711

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	94.91		mg/L		95	90 - 110	0	10
Fluoride	5.00	5.000		mg/L		100	90 - 110	0	10
Sulfate	100	92.48		mg/L		92	90 - 110	1	10

Lab Sample ID: MRL 280-555711/3
Matrix: Water
Analysis Batch: 555711

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5.00	3.825		mg/L		76	50 - 150
Fluoride	0.500	0.5502		mg/L		110	50 - 150
Sulfate	5.00	ND		mg/L		76	50 - 150

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 280-154176-7 MS
Matrix: Water
Analysis Batch: 555711

Client Sample ID: DUP
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	11.9		50.0	64.23		mg/L		105	80 - 120
Fluoride	0.925		5.00	5.806		mg/L		98	80 - 120

Lab Sample ID: 280-154176-7 MS
Matrix: Water
Analysis Batch: 555711

Client Sample ID: DUP
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	766	F1	250	1074	E F1	mg/L		123	80 - 120

Lab Sample ID: 280-154176-7 MSD
Matrix: Water
Analysis Batch: 555711

Client Sample ID: DUP
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	11.9		50.0	65.37		mg/L		107	80 - 120	2	20
Fluoride	0.925		5.00	5.810		mg/L		98	80 - 120	0	20

Lab Sample ID: 280-154176-7 MSD
Matrix: Water
Analysis Batch: 555711

Client Sample ID: DUP
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	766	F1	250	1082	E F1	mg/L		127	80 - 120	1	20

Lab Sample ID: 280-154176-7 DU
Matrix: Water
Analysis Batch: 555711

Client Sample ID: DUP
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	11.9		11.63		mg/L		2	15
Fluoride	0.925		0.8817		mg/L		5	15

Lab Sample ID: 280-154176-7 DU
Matrix: Water
Analysis Batch: 555711

Client Sample ID: DUP
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	766	F1	764.3		mg/L		0.2	15

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-553675/1
Matrix: Water
Analysis Batch: 553675

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10.0		mg/L			10/15/21 09:25	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 280-553675/2
Matrix: Water
Analysis Batch: 553675

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			511	484.0		mg/L		95	88 - 114		

Lab Sample ID: LCSD 280-553675/3
Matrix: Water
Analysis Batch: 553675

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)			511	481.0		mg/L		94	88 - 114	1	20

Lab Sample ID: 280-154176-7 DU
Matrix: Water
Analysis Batch: 553675

Client Sample ID: DUP
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	2080			2076		mg/L				0	10

Lab Sample ID: MB 280-553677/1
Matrix: Water
Analysis Batch: 553677

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10.0		mg/L			10/15/21 08:31	1

Lab Sample ID: LCS 280-553677/2
Matrix: Water
Analysis Batch: 553677

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			511	476.0		mg/L		93	88 - 114		

Lab Sample ID: 280-154176-3 DU
Matrix: Water
Analysis Batch: 553677

Client Sample ID: MW 17S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	1700			1710		mg/L				0.6	10

Lab Sample ID: MB 280-553680/1
Matrix: Water
Analysis Batch: 553680

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10.0		mg/L			10/15/21 08:34	1

Lab Sample ID: LCS 280-553680/2
Matrix: Water
Analysis Batch: 553680

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)			511	488.0		mg/L		96	88 - 114		

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: 280-154176-4 DU
Matrix: Water
Analysis Batch: 553680

Client Sample ID: MW 20S
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids (TDS)	1810			1816		mg/L				0.4	10

QC Association Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

Metals

Prep Batch: 553704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154176-1	MW 15S	Total Recoverable	Water	3005A	
280-154176-2	MW 16S	Total Recoverable	Water	3005A	
280-154176-3	MW 17S	Total Recoverable	Water	3005A	
280-154176-4	MW 20S	Total Recoverable	Water	3005A	
280-154176-5	MW 19S	Total Recoverable	Water	3005A	
280-154176-6	MW 18S	Total Recoverable	Water	3005A	
280-154176-7	DUP	Total Recoverable	Water	3005A	
MB 280-553704/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-553704/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 554534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154176-1	MW 15S	Total Recoverable	Water	6010C	553704
280-154176-2	MW 16S	Total Recoverable	Water	6010C	553704
280-154176-3	MW 17S	Total Recoverable	Water	6010C	553704
280-154176-4	MW 20S	Total Recoverable	Water	6010C	553704
280-154176-5	MW 19S	Total Recoverable	Water	6010C	553704
280-154176-6	MW 18S	Total Recoverable	Water	6010C	553704
280-154176-7	DUP	Total Recoverable	Water	6010C	553704
MB 280-553704/1-A	Method Blank	Total Recoverable	Water	6010C	553704
LCS 280-553704/2-A	Lab Control Sample	Total Recoverable	Water	6010C	553704

General Chemistry

Analysis Batch: 553675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154176-7	DUP	Total/NA	Water	SM 2540C	
MB 280-553675/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-553675/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-553675/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	
280-154176-7 DU	DUP	Total/NA	Water	SM 2540C	

Analysis Batch: 553677

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154176-1	MW 15S	Total/NA	Water	SM 2540C	
280-154176-2	MW 16S	Total/NA	Water	SM 2540C	
280-154176-3	MW 17S	Total/NA	Water	SM 2540C	
MB 280-553677/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-553677/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-154176-3 DU	MW 17S	Total/NA	Water	SM 2540C	

Analysis Batch: 553680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154176-4	MW 20S	Total/NA	Water	SM 2540C	
280-154176-5	MW 19S	Total/NA	Water	SM 2540C	
280-154176-6	MW 18S	Total/NA	Water	SM 2540C	
MB 280-553680/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-553680/2	Lab Control Sample	Total/NA	Water	SM 2540C	
280-154176-4 DU	MW 20S	Total/NA	Water	SM 2540C	

QC Association Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

General Chemistry

Analysis Batch: 555711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-154176-1	MW 15S	Total/NA	Water	9056A	
280-154176-1	MW 15S	Total/NA	Water	9056A	
280-154176-2	MW 16S	Total/NA	Water	9056A	
280-154176-3	MW 17S	Total/NA	Water	9056A	
280-154176-3	MW 17S	Total/NA	Water	9056A	
280-154176-4	MW 20S	Total/NA	Water	9056A	
280-154176-5	MW 19S	Total/NA	Water	9056A	
280-154176-5	MW 19S	Total/NA	Water	9056A	
280-154176-6	MW 18S	Total/NA	Water	9056A	
280-154176-6	MW 18S	Total/NA	Water	9056A	
280-154176-7	DUP	Total/NA	Water	9056A	
280-154176-7	DUP	Total/NA	Water	9056A	
MB 280-555711/6	Method Blank	Total/NA	Water	9056A	
LCS 280-555711/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-555711/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-555711/3	Lab Control Sample	Total/NA	Water	9056A	
280-154176-7 MS	DUP	Total/NA	Water	9056A	
280-154176-7 MS	DUP	Total/NA	Water	9056A	
280-154176-7 MSD	DUP	Total/NA	Water	9056A	
280-154176-7 MSD	DUP	Total/NA	Water	9056A	
280-154176-7 DU	DUP	Total/NA	Water	9056A	
280-154176-7 DU	DUP	Total/NA	Water	9056A	

Lab Chronicle

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

Client Sample ID: MW 15S
Date Collected: 10/12/21 08:25
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	553704	10/20/21 07:58	PNS	TAL DEN
Total Recoverable	Analysis	6010C		1			554534	10/20/21 23:50	LRD	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	555711	11/01/21 18:02	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	555711	11/01/21 18:17	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	553677	10/15/21 09:31	ABW	TAL DEN

Client Sample ID: MW 16S
Date Collected: 10/12/21 09:20
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	553704	10/20/21 07:58	PNS	TAL DEN
Total Recoverable	Analysis	6010C		1			554534	10/20/21 23:54	LRD	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	555711	11/01/21 18:32	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	553677	10/15/21 09:31	ABW	TAL DEN

Client Sample ID: MW 17S
Date Collected: 10/12/21 10:00
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	553704	10/20/21 07:58	PNS	TAL DEN
Total Recoverable	Analysis	6010C		1			554534	10/20/21 23:57	LRD	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	555711	11/01/21 19:02	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	555711	11/01/21 19:17	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	553677	10/15/21 09:31	ABW	TAL DEN

Client Sample ID: MW 20S
Date Collected: 10/12/21 10:25
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	553704	10/20/21 07:58	PNS	TAL DEN
Total Recoverable	Analysis	6010C		1			554534	10/21/21 00:00	LRD	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	555711	11/01/21 19:32	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	553680	10/15/21 09:34	ABW	TAL DEN

Client Sample ID: MW 19S
Date Collected: 10/12/21 11:25
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	553704	10/20/21 07:58	PNS	TAL DEN
Total Recoverable	Analysis	6010C		1			554534	10/21/21 00:04	LRD	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	555711	11/01/21 20:01	SPG	TAL DEN

Lab Chronicle

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

Client Sample ID: MW 19S
Date Collected: 10/12/21 11:25
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	5 mL	5 mL	555711	11/01/21 20:16	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	553680	10/15/21 09:34	ABW	TAL DEN

Client Sample ID: MW 18S
Date Collected: 10/12/21 13:20
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	553704	10/20/21 07:58	PNS	TAL DEN
Total Recoverable	Analysis	6010C		1			554534	10/21/21 00:07	LRD	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	555711	11/01/21 21:01	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	555711	11/01/21 21:16	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	553680	10/15/21 09:34	ABW	TAL DEN

Client Sample ID: DUP
Date Collected: 10/12/21 00:00
Date Received: 10/14/21 11:00

Lab Sample ID: 280-154176-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	553704	10/20/21 07:58	PNS	TAL DEN
Total Recoverable	Analysis	6010C		1			554534	10/21/21 00:10	LRD	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	555711	11/01/21 21:31	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	555711	11/01/21 22:31	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	50 mL	100 mL	553675	10/15/21 09:25	ABW	TAL DEN

Laboratory References:
TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Basin Electric Power Cooperative
Project/Site: CCR Groundwater - ND Sites- AVS Landfill

Job ID: 280-154176-1
SDG: AVS Landfill

Laboratory: Eurofins TestAmerica, Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
North Dakota	State	R-034	01-08-22

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: Aaron Knutson	Lab PM: Turner, Shelby R	Carrier Tracking No(s):	COC No:
Client Contact: Mr. Aaron Knutson	Phone: 701-745-7238	E-Mail: Shelby.Turner@Eurofinset.com		Page: 1 of 1
Company: Basin Electric Power Cooperative				Job #:

Address: 3901 Highway 200A	Due Date Requested:	Analysis Requested
City: Stanton	TAT Requested (days): Standard	
State, Zip: ND, 58571	PO #: Purchase Order Requested	
Phone: 701-745-7238(Tel)	WO #:	
Email: aknutson@bepc.com		
Project Name: CCR Groundwater - North Dakota Sites	Project #: 28021258	
Site: AVS LANDFILL	SSOW#:	

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010C - Total Calcium and Boron (App III)	6010C - Total Lithium (1 of 3), 6020A - Total 11 Metals (2 of 3), 7470A - Total Mercury (3 of 3) (Appendix IV)	2540C_Calcd - TDS	9056A_28D - Chloride, Fluoride, Sulfate	9056A_28D - Fluoride only (App IV)	9315_Ra226, 9320_Ra228, Combined Radium-226 and Radium-228	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	N	N	N	D		
MW 15S	10-12-21	0825	G	W	N		X		X	X				pH - 8.17
MW 16S	10-12-21	0920	G	W	N		X		X	X				pH - 8.96
MW 17S	10-12-21	1000	G	W	N		X		X	X				pH - 8.20
MW 20S	10-12-21	1025	G	W	N		X		X	X				pH - 7.89
MW 19S	10-12-21	1125	G	W	N		X		X	X				pH - 7.99
MW 18S	10-12-21	1320	G	W	N		X		X	X				pH - 9.46
DUP	10-12-21		G	W	N		X		X	X				

280-154176 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		10-13-21			10/14/2021 1100	EPA DEN
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: △ Yes △ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 0.1 CF +1.0 IR #11

Ver: 01/16/2019

280-154176 Waybill

ORIGIN ID:BISA (701) 745-3371
LELAND OLDS STATION
BASIN ELECTRIC
3901 HWY 200A

STANTON, ND 58571
UNITED STATES US

SHIP DATE: 13OCT21
ACTWGT: 53.00 LB
CAD: 251286197/INET4400

BILL SENDER

TO SHELBY TURNER
EUROFINS TESTAMERICA, DENVER
4955 YARROW ST

ARVADA CO 80002
(303) 736-0100

REF: CCR GROUNDWATER - ND SITE
INV:
PO: DEPT:

56DJ20778FE4A

FedEx Express

J212021070801uv

eurofins | Environment Testing TestAmerica

1699153

TRK# 0201 7749 5770 6024

XH LAAA

eurofins | Environme TestAmeric

1699152

FedEx Ship Manager - Print Your Label(s)

10/13/21, 7:24 AM

RT 650 4 10:30 E 6024 10.14

Login Sample Receipt Checklist

Client: Basin Electric Power Cooperative

Job Number: 280-154176-1
SDG Number: AVS Landfill

Login Number: 154176
List Number: 1
Creator: O'Hara, Jake F

List Source: Eurofins TestAmerica, Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Attachment B
AVS Landfill Expansion Monitoring Well Boring Logs

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-21(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2092.5 ft	Top of Casing Elev.:	2095.1 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,504.3 ft E 1,672,423.9 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	256.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
0					TOPSOIL: brown; moist; few roots, trace fine gravel.	Mine Spoils	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3' RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 241' to surface + 2.4' GROUT Type: Neat Cement Interval: 0-230' bgs SEAL Type: Bentonite Interval: 230-238' bgs SANDPACK Type: 35-45 10WS Interval: 238-256' bgs SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 241-251' bgs	2095
		1	CL		LEAN CLAY WITH SAND (CL): fine grained; yellowish brown to gray 10YR 5/4 - 5/1; moist; trace fine gravel, trace lignite inclusions.			2090
5		2						
			CL-CH		LEAN TO FAT CLAY WITH SAND (CL-CH): fine grained; dark gray to brown 10YR 4/1 - 4/3; moist; firm to hard; medium to high plasticity; 15% sand, 85% fines.			2085
10		3						
								2080
15								
			CL-CH		LEAN TO FAT CLAY (CL-CH): dark gray to brown 10YR 4/1 - 4/3; moist; hard; few lignite inclusions; medium to high plasticity.			2075
20		4						
								2070
25								
			CL-CH		LEAN TO FAT CLAY (CL-CH): gray 10YR 5/1; moist; hard; trace orange oxidized staining; medium to high plasticity; 1" fine sandstone band at 28'.			2065
30		5						
								2060

Date Boring Started:	9/23/20 12:10 pm
Date Boring Completed:	9/24/20 5:00 pm
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-161'
Native Sentinel Butte Formation: 161-256'
Spaer Bed Lignite: 242-250'

Additional data may have been collected in the field which is not included on this log.

P:\BISMARCK\34 ND\29\34291096 BASINELECTRIC-LATERAL LANDFILL\WORKFILES\PHASE I&II WORK PLAN\MONITORING WELL BORINGS AND INSTALLATION\BEPC WELL LOGS.GPJ BARRLIBRARY.GLB ENVIRO LOG BARR TEMPLATE.GDT

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-21(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2092.5 ft	Top of Casing Elev.:	2095.1 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,504.3 ft E 1,672,423.9 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	256.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
35			CL-CH		LEAN TO FAT CLAY (CL-CH): gray 10YR 5/1; moist; hard; trace orange oxidized staining; medium to high plasticity; 1" fine sandstone band at 28'. *(continued)*	Mine Spoils	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'**	2055
40		6	CH		FAT CLAY (CH): dark gray 10YR 4/1; moist; firm to hard; few lignite inclusions, trace orange oxidized staining; high plasticity.		RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **241' to surface + 2.4'** GROUT Type: **Neat Cement** Interval: **0-230' bgs** SEAL Type: **Bentonite** Interval: **230-238' bgs**	2050
45								
50		7					SANDPACK Type: **35-45 10WS** Interval: **238-256' bgs**	2045
55		8			MUDSTONE: gray 10YR 5/1; fractured.		SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **241-251' bgs**	2040
60			CL-CH		LEAN TO FAT CLAY WITH SAND (CL-CH): fine grained; dark gray to brown; moist; hard; trace orange oxidized staining; 20% sand, 80% fines.			2035
65		9			61-66' - no recovery during drilling, soft.			2030

Date Boring Started:	9/23/20 12:10 pm
Date Boring Completed:	9/24/20 5:00 pm
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-161'
Native Sentinel Butte Formation: 161-256'
Spaer Bed Lignite: 242-250'

Additional data may have been collected in the field which is not included on this log.

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Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-21(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2092.5 ft	Top of Casing Elev.:	2095.1 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,504.3 ft E 1,672,423.9 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	256.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
65					61-66' - no recovery during drilling, soft. *(continued)*	Mine Spoils	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'** RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **241' to surface + 2.4'** GROUT Type: **Neat Cement** Interval: **0-230' bgs** SEAL Type: **Bentonite** Interval: **230-238' bgs** SANDPACK Type: **35-45 10WS** Interval: **238-256' bgs** SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **241-251' bgs**	2025
70		10	CH		FAT CLAY WITH GRAVEL (CH): fine grained; dark brown 10YR 3/3; moist; hard; fractured, few orange oxidized staining; high plasticity; 20% gravel, 80% fines.			
75			CH		FAT CLAY (CH): very dark gray 10YR 3/1; moist; hard; fractured, trace lignite inclusions; high plasticity.			2020
80		11	CH		FAT CLAY WITH SAND/SILT (CH): very fine to fine grained; dark brown 10YR 3/3; moist; hard; high plasticity; 20% sand, 80% fines.			2015
85			CH		FAT CLAY (CH): very dark gray 10YR 3/1; moist; hard; high plasticity.			2010
90		12						2005
95			CH		FAT CLAY (CH): very dark gray 10YR 3/1; moist; hard; fine sand/silt lenses throughout; high plasticity.			2000
								1995

Date Boring Started:	9/23/20 12:10 pm
Date Boring Completed:	9/24/20 5:00 pm
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-161'
Native Sentinel Butte Formation: 161-256'
Spaer Bed Lignite: 242-250'

Additional data may have been collected in the field which is not included on this log.

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234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-21(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2092.5 ft	Top of Casing Elev.:	2095.1 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,504.3 ft E 1,672,423.9 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	256.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
100		13	CH		FAT CLAY (CH): very dark gray 10YR 3/1; moist; hard; fine sand/silt lenses throughout; high plasticity. *(continued)*	Mine Spoils	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'** RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **241' to surface + 2.4'** GROUT Type: **Neat Cement** Interval: **0-230' bgs** SEAL Type: **Bentonite** Interval: **230-238' bgs** SANDPACK Type: **35-45 10WS** Interval: **238-256' bgs** SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **241-251' bgs**	1990
105					LEAN TO FAT CLAY (CL-CH): dark gray 10YR 4/1; moist; hard; trace lignite inclusions; medium to high plasticity.			1985
110		14	CL-CH					1980
115								
120		15						1975
125					FAT CLAY (CH): dark gray to brown 10YR 4/1 - 4/3; moist; hard; few fine gravel and coarse sand, trace orange oxidized staining; high plasticity.			1970
130			CH					1965

Date Boring Started:	9/23/20 12:10 pm
Date Boring Completed:	9/24/20 5:00 pm
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-161'
Native Sentinel Butte Formation: 161-256'
Spaer Bed Lignite: 242-250'

Additional data may have been collected in the field which is not included on this log.

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LOG OF WELL MW-21(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2092.5 ft	Top of Casing Elev.:	2095.1 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,504.3 ft E 1,672,423.9 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	256.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
130		16	CH		FAT CLAY (CH): dark gray to brown 10YR 4/1 - 4/3; moist; hard; few fine gravel and coarse sand, trace orange oxidized staining; high plasticity. *(continued)*	Mine Spoils	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3' RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 241' to surface + 2.4' GROUT Type: Neat Cement Interval: 0-230' bgs SEAL Type: Bentonite Interval: 230-238' bgs SANDPACK Type: 35-45 10WS Interval: 238-256' bgs SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 241-251' bgs	1960
			SM		SILTY SAND (SM): fine to medium grained; light yellowish brown 10YR 6/4; moist; angular to subangular; trace lignite inclusions, loose; 70% sand, 30% fines.			
135					FAT CLAY (CH): dark gray to brown 10YR 4/1 - 4/3; moist; hard; few fine gravel and coarse sand, trace orange oxidized staining.			
140		17	CH					1955
145					LEAN TO FAT CLAY (CL-CH): dark gray to brown 10YR 4/1 - 4/3; moist; firm to hard; few fine gravel and fine sand lenses throughout, few lignite inclusion, few orange oxidized staining; medium to high plasticity.			1950
150		18	CL-CH					1945
155								1940
160		19	CH		END OF MINE SPOILS - FAT CLAY (CH): very dark gray 10YR 3/1; dry to moist; hard; fractured; high plasticity; 1" lignite bands at 161', 163', and 164'.			1935
								1930

Date Boring Started:	9/23/20 12:10 pm
Date Boring Completed:	9/24/20 5:00 pm
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-161'
Native Sentinel Butte Formation: 161-256'
Spaer Bed Lignite: 242-250'

Additional data may have been collected in the field which is not included on this log.

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Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-21(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2092.5 ft	Top of Casing Elev.:	2095.1 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,504.3 ft E 1,672,423.9 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	256.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
165			CH		END OF MINE SPOILS - FAT CLAY (CH): very dark gray 10YR 3/1; dry to moist; hard; fractured; high plasticity; 1" lignite bands at 161', 163', and 164'. *(continued)*	Native Sentinel Butte Formation	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'**	1925
			CH		FAT CLAY (CH): greenish gray GLEY1 5/1; dry to moist; hard; fractured; high plasticity.		RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **241' to surface + 2.4'**	
170		20	CH		FAT CLAY (CH): dark gray to very dark gray 10YR 4/1 - 3/1; dry to moist; hard; fractured, silt lenses throughout; high plasticity.		GROUT Type: **Neat Cement** Interval: **0-230' bgs**	1920
175							SEAL Type: **Bentonite** Interval: **230-238' bgs**	1915
180		21	SM		SILTY SAND (SM): fine grained; gray 10YR 5/1; moist; hard; 70% sand, 30% fines.		SANDPACK Type: **35-45 10WS** Interval: **238-256' bgs**	
			CH		FAT CLAY (CH): dark gray to very dark gray 10YR 4/1 - 3/1; moist; hard; fractured; high plasticity.		SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **241-251' bgs**	1910
185			CH		FAT CLAY (CH): greenish gray GLEY1 5/1; moist; hard; fractured, thin fine sand/silt lenses throughout; high plasticity.			1905
190		22	CH		FAT CLAY (CH): dark gray to very dark gray 10YR 4/1 - 3/1; moist; hard; fractured; high plasticity.			1900
195			CH		FAT CLAY (CH): greenish gray GLEY1 5/1; moist; hard; fractured, thin fine sand/silt lenses throughout; high plasticity.			

Date Boring Started:	9/23/20 12:10 pm
Date Boring Completed:	9/24/20 5:00 pm
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-161'
Native Sentinel Butte Formation: 161-256'
Spaer Bed Lignite: 242-250'

Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-21(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2092.5 ft	Top of Casing Elev.:	2095.1 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,504.3 ft E 1,672,423.9 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	256.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
195			CH			Native Sentinel Butte Formation	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3'	1895
			CH		FAT CLAY (CH): dark gray to very dark gray 10YR 4/1 - 3/1; moist; hard; fractured; high plasticity.			
200		23					RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 241' to surface + 2.4'	1890
			CH		FAT CLAY (CH): greenish gray GLEY1 5/1; moist; hard; fractured, thin fine sand/silt lenses throughout; high plasticity.		GROUT Type: Neat Cement Interval: 0-230' bgs	
205					SHALE: greenish gray GLEY1 5/1; very hard.			
		24	CL-ML		LEAN CLAY TO SILT (CL-ML): gray 10YR 5/1; moist; hard; indistinguishable fines.		SEAL Type: Bentonite Interval: 230-238' bgs	1885
210			CH		FAT CLAY (CH): dark gray to very dark gray 10YR 4/1 - 3/1; moist; hard; fractured; high plasticity; 1" lignite band at 214'.		SANDPACK Type: 35-45 10WS Interval: 238-256' bgs	
		25						1880
215		-					SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 241-251' bgs	
		26	ML		SILT (ML): gray to dark gray 10YR 5/1 - 4/1; hard; fractured.			1875
220			CL-ML		LEAN CLAY TO SILT (CL-ML): gray 10YR 4/1; moist; firm to hard; fractured; indistinguishable fines.			1870
		27						
225			CL-CH		LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; moist; hard; fractured; medium to high plasticity.			1865

Date Boring Started:	9/23/20 12:10 pm
Date Boring Completed:	9/24/20 5:00 pm
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-161'
Native Sentinel Butte Formation: 161-256'
Spaer Bed Lignite: 242-250'

Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-21(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2092.5 ft	Top of Casing Elev.:	2095.1 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,504.3 ft E 1,672,423.9 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	256.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
230		28	CL-CH		LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; moist; hard; fractured; medium to high plasticity. *(continued)*	Native Sentinel Butte Formation	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3' RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 241' to surface + 2.4' GROUT Type: Neat Cement Interval: 0-230' bgs SEAL Type: Bentonite Interval: 230-238' bgs SANDPACK Type: 35-45 10WS Interval: 238-256' bgs SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 241-251' bgs	1860
235		29						
240		30						1855
245		31			LIGNITE: Spaer Bed; black to dark brown 10YR 2/1 - 3/3; dry; fractured, crumbly, few thin bands appearing wet.	Spaer Bed Lignite		1850
250		32	CL-ML		SANDY LEAN CLAY TO SANDY SILT (CL-ML): fine grained; gray 10YR 5/1; moist; hard; fractured, trace carbonaceous staining at fracture planes; non-plastic plasticity.	Native Sentinel Butte Formation		1845
255								1840
					End of well 256.0 feet			1835
260								

Date Boring Started:	9/23/20 12:10 pm
Date Boring Completed:	9/24/20 5:00 pm
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-161'
Native Sentinel Butte Formation: 161-256'
Spaer Bed Lignite: 242-250'

Additional data may have been collected in the field which is not included on this log.

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234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-22(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2091.4 ft	Top of Casing Elev.: 2094.3 ft
Project No.:	34291096	Drilling Method:	Rotosonic	
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core	
Coordinates:	N 632,582.1 ft E 1,675,123.0 ft			
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	236.0 ft	

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	Elevation, feet
0					TOPSOIL: very dark gray 10YR 3/1; dry to moist; trace roots.	Mine Spoils	2090
		1	CL		LEAN CLAY (CL): gray to brown; moist; soft; few fine to coarse gravel; medium plasticity; 10% gravel, 90% fines.		
5			CL		LEAN CLAY WITH SAND (CL): dark gray to brown; moist; soft; medium plasticity; 20% sand, 80% fines.		2085
10		2	SM		SILTY SAND (SM): fine grained; dark gray 10YR 4/1; moist.		2080
			CH		FAT CLAY (CH): very dark gray 10YR 3/1; moist; hard; high plasticity.		
15			SM		SILTY SAND (SM): fine grained; dark gray 10YR 4/1; moist.		2075
20		3	CL-CH		LEAN TO FAT CLAY (CL-CH): brown to very dark gray 10YR 4/3 - 3/1; moist; firm to hard; trace fine sand, trace lignite inclusions; medium to high plasticity.		2070
25							2065
30		4	SC-CL		CLAYEY SAND TO SANDY CLAY (SC-CL): fine grained; dark gray 10YR 4/1; moist; low plasticity.		
			CL-CH		LEAN TO FAT CLAY WITH SAND (CL-CH): fine grained; very dark gray 10YR 3/1; moist; trace lignite inclusions; medium to high plasticity.		2060

WELL OR PIEZOMETER CONSTRUCTION DETAIL

PRO. CASING
- Diameter: **6"**
- Type: **Steel**
- Interval: **5' to surface + 3'**

RISER CASING
- Diameter: **2"**
- Type: **SCH 80 PVC**
- Interval: **223' to surface + 2.5'**

GROUT
- Type: **Neat Cement**
- Interval: **0-214.5' bgs**

SEAL
- Type: **Bentonite**
- Interval: **214.5-220' bgs**

SANDPACK
- Type: **35-45 10WS**
- Interval: **220-236' bgs**

SCREEN
- Diameter: **2" (#10)**
- Type: **SCH 80 PVC**
- Interval: **223-233' bgs**

Date Boring Started:	9/9/20 12:50 pm
Date Boring Completed:	9/11/20 9:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-148'
Native Sentinel Butte Formation: 148-236'
Spaer Bed Lignite: 224.9-232.3'

Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-22(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2091.4 ft	Top of Casing Elev.: 2094.3 ft
Project No.:	34291096	Drilling Method:	Rotosonic	
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core	
Coordinates:	N 632,582.1 ft E 1,675,123.0 ft	Completion Depth:	236.0 ft	
Datum:	ND State Plane, South Zone, 1927 NAD			

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
35			CL-CH		LEAN TO FAT CLAY WITH SAND (CL-CH): fine grained; very dark gray 10YR 3/1; moist; trace lignite inclusions; medium to high plasticity. *(continued)*	Mine Spoils	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'**	2055
					LIGNITE: black; weathered.			
40		5	CH		FAT CLAY (CH): very dark gray to dark brown 10YR 3/1 - 3/2; moist; hard; trace sand, trace fine gravel; high plasticity.		RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **223' to surface + 2.5'**	2050
45			CH		FAT CLAY WITH LIGNITE (CH): very dark gray to dark brown 10YR 3/1 - 3/2; moist; hard; trace sand, trace fine gravel; high plasticity; 50% lignite.		GROUT Type: **Neat Cement** Interval: **0-214.5' bgs** SEAL Type: **Bentonite** Interval: **214.5-220' bgs**	2045
50		6	SM-SC		SILTY SAND TO CLAYEY SAND (SM-SC): fine grained; dark gray 10YR 4/1; moist; firm to hard.		SANDPACK Type: **35-45 10WS** Interval: **220-236' bgs** SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **223-233' bgs**	2040
55								
60		7	CL-CH		LEAN TO FAT CLAY (CL-CH): dark gray 10YR 4/1; moist; hard; few fine sand lenses throughout; medium to high plasticity.			2035
65								2030

Date Boring Started:	9/9/20 12:50 pm
Date Boring Completed:	9/11/20 9:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-148'
Native Sentinel Butte Formation: 148-236'
Spaer Bed Lignite: 224.9-232.3'

Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-22(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2091.4 ft	Top of Casing Elev.:	2094.3 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 632,582.1 ft E 1,675,123.0 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	236.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
65						Mine Spoils	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3' RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 223' to surface + 2.5' GROUT Type: Neat Cement Interval: 0-214.5' bgs SEAL Type: Bentonite Interval: 214.5-220' bgs SANDPACK Type: 35-45 10WS Interval: 220-236' bgs SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 223-233' bgs	2025
			SC		CLAYEY SAND (SC): fine grained; gray 10YR 5/1; moist; soft.			
			CL-CH		LEAN TO FAT CLAY (CL-CH): gray to brown; moist; firm to hard; fine sand lenses throughout.			
70			SM		SILTY SAND (SM): fine grained; gray 10YR 5/1; moist.			
		8	CH		FAT CLAY (CH): brown 10YR 4/3; moist; hard; trace lignite inclusions, few fine gravel; high plasticity.			2020
75								
			CH		FAT CLAY (CH): dark gray 10YR 4/1; moist; hard; fine sand/silt lenses throughout; high plasticity.			2015
80		9	CH					
85								2010
			CH		FAT CLAY (CH): dark gray 10YR 4/1 to brown 10YR 4/3; moist; hard; fine sand/silt lenses throughout, trace orange oxidized staining, trace fine gravel; high plasticity.			2005
90		10	CH					
								2000
95								
			CH		FAT CLAY (CH): dark gray to brown 10YR 4/1 - 4/3; moist; trace orange oxidized staining, trace fine gravel and scoria; high plasticity.			1995

Date Boring Started:	9/9/20 12:50 pm
Date Boring Completed:	9/11/20 9:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-148'
Native Sentinel Butte Formation: 148-236'
Spaer Bed Lignite: 224.9-232.3'

Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-22(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2091.4 ft	Top of Casing Elev.:	2094.3 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 632,582.1 ft E 1,675,123.0 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	236.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
100			CH		FAT CLAY (CH): dark gray to brown 10YR 4/1 - 4/3; moist; trace orange oxidized staining, trace fine gravel and scoria; high plasticity. *(continued)*	Mine Spoils	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'**	
		11			FAT CLAY (CH): very dark gray 10YR 3/1; moist; hard; high plasticity.		RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **223' to surface + 2.5'**	1990
105			CH				GROUT Type: **Neat Cement** Interval: **0-214.5' bgs**	
					FAT CLAY (CH): brown 10YR 4/3; moist; firm; few fine to coarse gravel; high plasticity; 10% gravel, 90% fines.			1985
110		12			106-116' - soft drilling.		SEAL Type: **Bentonite** Interval: **214.5-220' bgs**	1980
115					116-126' - wet to moist.		SANDPACK Type: **35-45 10WS** Interval: **220-236' bgs**	
			CH				SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **223-233' bgs**	1975
120		13						1970
125								1965
130								

Date Boring Started: 9/9/20 12:50 pm
Date Boring Completed: 9/11/20 9:30 am
Logged By: MLJ2
Drilling Contractor: Cascade
Drill Rig: Rotosonic

Remarks: Mine Spoils: 0-148'
Native Sentinel Butte Formation: 148-236'
Spaer Bed Lignite: 224.9-232.3'

Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-22(S)

Project: BEPC AVS Landfill Expansion
Project No.: 34291096
Location: Antelope Valley Station, Beulah, ND
Coordinates: N 632,582.1 ft E 1,675,123.0 ft
Datum: ND State Plane, South Zone, 1927 NAD

Surface Elevation: 2091.4 ft
Drilling Method: Rotosonic
Sampling Method: Rotosonic Core
Completion Depth: 236.0 ft

Top of Casing Elev.: 2094.3 ft

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
130		14	CH		FAT CLAY (CH): brown 10YR 4/3; moist; firm; few fine to coarse gravel; high plasticity; 10% gravel, 90% fines. *(continued)* 1" band of fine sandstone.	Mine Spoils	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3' RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 223' to surface + 2.5' GROUT Type: Neat Cement Interval: 0-214.5' bgs SEAL Type: Bentonite Interval: 214.5-220' bgs SANDPACK Type: 35-45 10WS Interval: 220-236' bgs SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 223-233' bgs	1960
135								
140		15						1955
145								1950
150		16	CH		END OF MINE SPOILS - FAT CLAY (CH): very dark gray 10YR 3/1; dry to moist; hard; silt/fine sand lenses throughout, thin lignite lenses throughout.	Native Sentinel Butte Formation		1945
155								1940
160		17						1935
								1930

Date Boring Started: 9/9/20 12:50 pm
Date Boring Completed: 9/11/20 9:30 am
Logged By: MLJ2
Drilling Contractor: Cascade
Drill Rig: Rotosonic

Remarks: Mine Spoils: 0-148'
Native Sentinel Butte Formation: 148-236'
Spaer Bed Lignite: 224.9-232.3'

Additional data may have been collected in the field which is not included on this log.

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Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-22(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2091.4 ft	Top of Casing Elev.:	2094.3 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 632,582.1 ft E 1,675,123.0 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	236.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
165					END OF MINE SPOILS - FAT CLAY (CH): very dark gray 10YR 3/1; dry to moist; hard; silt/fine sand lenses throughout, thin lignite lenses throughout. *(continued)*	Native Sentinel Butte Formation	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'**	1925
170		18	CH				RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **223' to surface + 2.5'**	1920
175							GROUT Type: **Neat Cement** Interval: **0-214.5' bgs**	
180		19					SEAL Type: **Bentonite** Interval: **214.5-220' bgs**	1915
185					FAT CLAY (CH): dark greenish gray GLEY1 4/1; moist; hard; trace brachiopod fossil imprints; high plasticity.		SANDPACK Type: **35-45 10WS** Interval: **220-236' bgs**	
190		20	CH				SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **223-233' bgs**	1910
195								1905
								1900

Date Boring Started:	9/9/20 12:50 pm
Date Boring Completed:	9/11/20 9:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-148'
Native Sentinel Butte Formation: 148-236'
Spaer Bed Lignite: 224.9-232.3'

Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-22(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2091.4 ft	Top of Casing Elev.:	2094.3 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 632,582.1 ft E 1,675,123.0 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	236.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
195			CH			Native Sentinel Butte Formation	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3'	1895
			SM		SILTY SAND (SM): fine grained; gray 10YR 6/1; dry to moist; firm to hard.			
200			CH		FAT CLAY (CH): very dark gray 10YR 3/1; moist; hard; high plasticity.		RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 223' to surface + 2.5'	1890
205		22			SHALE: very dark gray 10YR 3/1; very hard.		GROUT Type: Neat Cement Interval: 0-214.5' bgs	1885
210		23	CH		FAT CLAY (CH): dark gray 10YR 4/1; moist; hard; thin fine sand/silt lenses throughout; high plasticity.		SEAL Type: Bentonite Interval: 214.5-220' bgs SANDPACK Type: 35-45 10WS Interval: 220-236' bgs	1880
215							SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 223-233' bgs	
220		24	CH		FAT CLAY (CH): dark gray 10YR 4/1; moist; hard; high plasticity.			1875
225					LIGNITE: Spaer Bed; black 10YR 2/1; dry; hard; fractured, crumbly, some orange/brown staining 10YR 4/4, thin wet bands at 225.3' and 228'.			1870
								1865

Date Boring Started:	9/9/20 12:50 pm
Date Boring Completed:	9/11/20 9:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-148'
Native Sentinel Butte Formation: 148-236'
Spaer Bed Lignite: 224.9-232.3'

Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-22(S)

Project: BEPC AVS Landfill Expansion
Project No.: 34291096
Location: Antelope Valley Station, Beulah, ND
Coordinates: N 632,582.1 ft E 1,675,123.0 ft
Datum: ND State Plane, South Zone, 1927 NAD

Surface Elevation: 2091.4 ft
Drilling Method: Rotosonic
Sampling Method: Rotosonic Core
Completion Depth: 236.0 ft

Top of Casing Elev.: 2094.3 ft

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
230		25			LIGNITE: Spaer Bed; black 10YR 2/1; dry; hard; fractured, crumbly, some orange/brown staining 10YR 4/4, thin wet bands at 225.3' and 228'. *(continued)*	Spaer Bed Lignite	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'** RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **223' to surface + 2.5'** GROUT Type: **Neat Cement** Interval: **0-214.5' bgs** SEAL Type: **Bentonite** Interval: **214.5-220' bgs** SANDPACK Type: **35-45 10WS** Interval: **220-236' bgs** SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **223-233' bgs**	1860
235		26			SILTY SAND TO SANDY SILT: fine grained; dark gray 10YR 4/1; dry to moist; hard.	Native Sentinel Butte Formation		1855
			CH		FAT CLAY (CH): dark gray 10YR 4/1; dry to moist; hard; high plasticity.			
					End of well 236.0 feet			
240								1850
245								1845
250								1840
255								1835
260								

Date Boring Started: 9/9/20 12:50 pm
Date Boring Completed: 9/11/20 9:30 am
Logged By: MLJ2
Drilling Contractor: Cascade
Drill Rig: Rotosonic

Remarks: Mine Spoils: 0-148'
Native Sentinel Butte Formation: 148-236'
Spaer Bed Lignite: 224.9-232.3'

Additional data may have been collected in the field which is not included on this log.

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Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-23(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2077.6 ft	Top of Casing Elev.: 2080.6 ft
Project No.:	34291096	Drilling Method:	Rotosonic	
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core	
Coordinates:	N 633,544.9 ft E 1,675,138.1 ft	Completion Depth:	240.0 ft	
Datum:	ND State Plane, South Zone, 1927 NAD			

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
0					TOPSOIL: black; moist; soft; few roots.	Mine Spoils	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3' RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 200' to surface + 2.6' GROUT Type: Neat Cement Interval: 0-190' bgs SEAL Type: Bentonite Interval: 190-196.5' bgs SANDPACK Type: 35-45 10WS Interval: 196.5-213' bgs SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 200-210' bgs	2075
		1	SP-SM		POORLY GRADED SAND WITH SILT (SP-SM): fine to medium grained; brown 10YR 4/3; moist; firm; angular to subangular.			
5					LEAN TO FAT CLAY WITH SAND (CL-CH): dark gray 10YR 4/1; moist; hard; trace lignite inclusions; medium to high plasticity; 20% sand, 80% fines.			
10		2	CL-CH					2070
15								2065
			SP-SM		POORLY GRADED SAND WITH SILT (SP-SM): fine to medium grained; grayish brown 10YR 5/2; moist; angular to subangular.			
			CL		SANDY LEAN CLAY (CL): fine to medium grained; grayish brown 10YR 5/2; moist; 40% sand, 60% fines.			2060
20		3						
			SC-SM		CLAYEY TO SILTY SAND (SC-SM): fine to medium grained; gray 10YR 5/1; moist; trace orange oxidized staining.			2055
25					SANDSTONE: fine grained; light gray 10YR 7/1; dry; crushed.			
					POORLY GRADED SAND WITH SILT: fine to medium grained; gray 10YR 5/1; moist; angular to subangular.			2050
			CL		SANDY LEAN CLAY (CL): fine to medium grained; brown to gray; moist; firm to hard; few fine gravel; 8% gravel, 35% sand, 57% fines.			
30		4						

Date Boring Started:	9/12/20 2:25 pm
Date Boring Completed:	9/14/20 11:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-118'
Native Sentinel Butte Formation: 118-240'
Spaer Bed Lignite: 199-208'

Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-23(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2077.6 ft	Top of Casing Elev.:	2080.6 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,544.9 ft E 1,675,138.1 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	240.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
			CL		SANDY LEAN CLAY (CL): fine to medium grained; brown to gray; moist; firm to hard; few fine gravel; 8% gravel, 35% sand, 57% fines. *(continued)*			2045
35					FAT CLAY (CH): dark gray 10YR 4/1; moist; hard; trace lignite inclusions, thin sand lenses throughout; high plasticity.		PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'**	2040
40		5	CH				RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **200' to surface + 2.6'**	
45					LIGNITE: black; hard; fractured, crumbly.		GROUT Type: **Neat Cement** Interval: **0-190' bgs**	2035
			CH		FAT CLAY (CH): dark gray 10YR 4/1; moist; firm to hard; trace orange oxidized staining; high plasticity.	Mine Spoils	SEAL Type: **Bentonite** Interval: **190-196.5' bgs**	2030
50		6	SC-SM		CLAYEY TO SILTY SAND (SC-SM): fine to medium grained; gray to pale brown 10YR 5/1 - 6/3; dry to moist; hard; angular to subangular; trace lignite, crumbly.		SANDPACK Type: **35-45 10WS** Interval: **196.5-213' bgs**	2025
55							SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **200-210' bgs**	2020
60		7			MUDSTONE: light gray 10YR 7/1; dry; hard; fractured, crushed.			2015
65								

Date Boring Started:	9/12/20 2:25 pm
Date Boring Completed:	9/14/20 11:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-118'
Native Sentinel Butte Formation: 118-240'
Spaer Bed Lignite: 199-208'

Additional data may have been collected in the field which is not included on this log.

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Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-23(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2077.6 ft	Top of Casing Elev.:	2080.6 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,544.9 ft E 1,675,138.1 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	240.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
65					MUDSTONE: light gray 10YR 7/1; dry; hard; fractured, crushed. *(continued)*			
					FAT CLAY WITH GRAVEL (CH): fine grained; dark yellowish brown 10YR 3/4; moist; hard; little lignite inclusions, trace orange staining, trace sand lenses; 25% gravel, 2% sand, 73% fines.		PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'**	2010
70		8	CH				RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **200' to surface + 2.6'**	2005
75							GROUT Type: **Neat Cement** Interval: **0-190' bgs**	
							SEAL Type: **Bentonite** Interval: **190-196.5' bgs**	2000
80			SP-SM		POORLY GRADED SAND WITH SILT (SP-SM): fine grained; gray 10YR 5/1; hard; crumbly.			
		9			FAT CLAY WITH GRAVEL (CH): fine grained; dark yellowish brown 10YR 3/4; moist; hard; little lignite inclusions, trace orange staining, trace sand lenses; 25% gravel, 2% sand, 73% fines.	Mine Spoils	SANDPACK Type: **35-45 10WS** Interval: **196.5-213' bgs**	1995
85			CH		Moist to wet.		SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **200-210' bgs**	1990
90		10			SILTSTONE: light gray 10YR 7/1; dry; fractured, crushed.			
					FAT CLAY WITH GRAVEL (CH): fine grained; dark yellowish brown 10YR 3/4; moist; hard; little lignite inclusions, trace orange staining, trace sand lenses; 25% gravel, 2% sand, 73% fines.			1985
95			CH					

Date Boring Started:	9/12/20 2:25 pm
Date Boring Completed:	9/14/20 11:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-118'
Native Sentinel Butte Formation: 118-240'
Spaer Bed Lignite: 199-208'

Additional data may have been collected in the field which is not included on this log.

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Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-23(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2077.6 ft	Top of Casing Elev.:	2080.6 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,544.9 ft E 1,675,138.1 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	240.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
100		11	CH		FAT CLAY WITH GRAVEL (CH): fine grained; dark yellowish brown 10YR 3/4; moist; hard; little lignite inclusions, trace orange staining, trace sand lenses; 25% gravel, 2% sand, 73% fines. *(continued)* 96-106' - moist to wet; firm. 96-106' - moist to wet; firm. *(continued)*	Mine Spoils	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'** RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **200' to surface + 2.6'** GROUT Type: **Neat Cement** Interval: **0-190' bgs** SEAL Type: **Bentonite** Interval: **190-196.5' bgs** SANDPACK Type: **35-45 10WS** Interval: **196.5-213' bgs** SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **200-210' bgs**	1980
105					Harder.			1975
110		12						1970
115								1965
120		13	CL-CH		END OF MINE SPOILS - LEAN TO FAT CLAY (CL-CH): dark gray 10YR 4/1; dry to moist; hard; 1" lignite bands throughout; medium to high plasticity.	Native Sentinel Butte Formation		1960
125								1955
130								1950

Date Boring Started:	9/12/20 2:25 pm
Date Boring Completed:	9/14/20 11:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-118'
Native Sentinel Butte Formation: 118-240'
Spaer Bed Lignite: 199-208'

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LOG OF WELL MW-23(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2077.6 ft	Top of Casing Elev.:	2080.6 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,544.9 ft E 1,675,138.1 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	240.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
130		14	CL-CH		END OF MINE SPOILS - LEAN TO FAT CLAY (CL-CH): dark gray 10YR 4/1; dry to moist; hard; 1" lignite bands throughout; medium to high plasticity. *(continued)*	Native Sentinel Butte Formation	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'** RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **200' to surface + 2.6'** GROUT Type: **Neat Cement** Interval: **0-190' bgs** SEAL Type: **Bentonite** Interval: **190-196.5' bgs** SANDPACK Type: **35-45 10WS** Interval: **196.5-213' bgs** SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **200-210' bgs**	1945
135					1" siltstone band.			
140		15	CH		FAT CLAY (CH): gray to very dark gray 10YR 3/1 - 4/1; dry to moist; hard; high plasticity.			1940
145			CH		FAT CLAY (CH): dark greenish gray GLEY1 4/1; dry to moist; hard; high plasticity.			1935
150		16	ML		SILT (ML): gray 10YR 6/1; dry to moist; hard; bands of lean clay throughout.			1930
155			CH		FAT CLAY (CH): very dark gray 10YR 3/1; moist; hard; high plasticity.			1925
160		17	CL-ML		LEAN CLAY TO SILT WITH SAND (CL-ML): fine grained; dark gray 10YR 3/1; dry to moist; low plasticity.			1920

Date Boring Started:	9/12/20 2:25 pm
Date Boring Completed:	9/14/20 11:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-118'
Native Sentinel Butte Formation: 118-240'
Spaer Bed Lignite: 199-208'

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LOG OF WELL MW-23(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2077.6 ft	Top of Casing Elev.:	2080.6 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,544.9 ft E 1,675,138.1 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	240.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
165					FAT CLAY (CH): very dark gray 10YR 3/1; dry to moist; hard; trace 1" lignite bands throughout; high plasticity.	Native Sentinel Butte Formation	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3'	1915
170		18					RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 200' to surface + 2.6'	1910
175		19	CH		Very hard. Trace fine sand/silt lenses.		GROUT Type: Neat Cement Interval: 0-190' bgs SEAL Type: Bentonite Interval: 190-196.5' bgs	1905
180		20					SANDPACK Type: 35-45 10WS Interval: 196.5-213' bgs	1900
185							SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 200-210' bgs	1895
190		21	SC		CLAYEY SAND (SC): fine grained; very dark gray 10YR 3/1; moist; very hard; few organics/lignite lenses; 70% sand, 30% fines.			1890
195					SHALE: very dark gray 10YR 3/1; dry to moist; very hard; with little fine sand, few organics/lignite lenses; 20% sand, 80% fines.			1885

Date Boring Started:	9/12/20 2:25 pm
Date Boring Completed:	9/14/20 11:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-118'
Native Sentinel Butte Formation: 118-240'
Spaer Bed Lignite: 199-208'

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LOG OF WELL MW-23(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2077.6 ft	Top of Casing Elev.:	2080.6 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,544.9 ft E 1,675,138.1 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	240.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
195								
			SM-SC		SILTY TO CLAYEY SAND (SM-SC): fine grained; dark gray 10YR 4/1; moist; crumbly.			1880
200		23			LIGNITE: Spaer Bed; black to very dark brown 10YR 2/1 - 2/2; dry; with few bands appearing wet, fractured, crumbly.	Spaer Bed Lignite		1875
205		24						1870
210		25	SM-SC		SILT TO SILTY SAND (SM-SC): fine grained; gray 10YR 5/1; dry to moist; hard; 50% sand, 50% fines.	Native Sentinel Butte Formation		1865
215			CL-CH		LEAN TO FAT CLAY (CL-CH): gray to very dark gray 10YR 3/1 - 5/1; dry to moist; hard; medium to high plasticity.			1860
220		26	CL		SANDY/SILTY LEAN CLAY (CL): fine grained; gray 10YR 5/1; moist; hard to soft; medium plasticity; 40% sand, 60% fines.			1855
225			CL-SC		SANDY LEAN CLAY TO CLAYEY SAND (CL-SC): fine grained; gray 10YR 5/1; moist; hard to firm; 50% sand, 50% fines.			

PRO. CASING
Diameter: **6"**
Type: **Steel**
Interval: **5' to surface + 3'**

RISER CASING
Diameter: **2"**
Type: **SCH 80 PVC**
Interval: **200' to surface + 2.6'**

GROUT
Type: **Neat Cement**
Interval: **0-190' bgs**

SEAL
Type: **Bentonite**
Interval: **190-196.5' bgs**

SANDPACK
Type: **35-45 10WS**
Interval: **196.5-213' bgs**

SCREEN
Diameter: **2" (#10)**
Type: **SCH 80 PVC**
Interval: **200-210' bgs**

Date Boring Started:	9/12/20 2:25 pm
Date Boring Completed:	9/14/20 11:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-118'
Native Sentinel Butte Formation: 118-240'
Spaer Bed Lignite: 199-208'

Additional data may have been collected in the field which is not included on this log.

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LOG OF WELL MW-23(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2077.6 ft	Top of Casing Elev.:	2080.6 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 633,544.9 ft E 1,675,138.1 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	240.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
230		27	CL-SC		SANDY LEAN CLAY TO CLAYEY SAND (CL-SC): fine grained; gray 10YR 5/1; moist; hard to firm; 50% sand, 50% fines. *(continued)*	Native Sentinel Butte Formation	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3' RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 200' to surface + 2.6' GROUT Type: Neat Cement Interval: 0-190' bgs SEAL Type: Bentonite Interval: 190-196.5' bgs SANDPACK Type: 35-45 10WS Interval: 196.5-213' bgs SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 200-210' bgs	1850 1845 1840 1835 1830 1825 1820
235								
240					End of well 240.0 feet			
245								
250								
255								
260								

Date Boring Started:	9/12/20 2:25 pm
Date Boring Completed:	9/14/20 11:30 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-118'
Native Sentinel Butte Formation: 118-240'
Spaer Bed Lignite: 199-208'

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LOG OF WELL MW-24(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2068.2 ft	Top of Casing Elev.:	2071.0 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 634,449.4 ft E 1,675,151.4 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	220.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
0					TOPSOIL: black to dark brown; moist to wet; few roots.	Mine Spoils	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3'	2065
			SC-SM		CLAYEY TO SILTY SAND (SC-SM): fine to medium grained; yellowish brown 10YR 5/4; moist; trace gravel, few orange oxidized staining.			
5		1			LEAN TO FAT CLAY (CL-CH): dark gray to gray 10YR 4/1 - 6/1; moist; hard to firm; trace lignite inclusions; medium to high plasticity.		RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 205' to surface + 2.5'	2060
10		2	CL-CH				GROUT Type: Neat Cement Interval: 0-197' bgs	2055
15							SEAL Type: Bentonite Interval: 197-202' bgs	
					LEAN TO FAT CLAY (CL-CH): dark gray to brown 10YR 4/1 - 4/3; moist; hard to firm; trace lignite inclusions, few fine gravel; medium to high plasticity.		SANDPACK Type: 35-45 10WS Interval: 202-217' bgs	2050
20		3	CL-CH				SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 205-215' bgs	2045
25								
30		4						2040

Date Boring Started:	9/15/20 2:30 pm
Date Boring Completed:	9/17/20 11:40 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-122'
Native Sentinel Butte Formation: 122-220'
Spaer Bed Lignite: 206-214'

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LOG OF WELL MW-24(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2068.2 ft	Top of Casing Elev.:	2071.0 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 634,449.4 ft E 1,675,151.4 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	220.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
35					LEAN TO FAT CLAY (CL-CH): dark gray to brown 10YR 4/1 - 4/3; moist; hard to firm; trace lignite inclusions, few fine gravel; medium to high plasticity. *(continued)*	Mine Spoils	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'** RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **205' to surface + 2.5'** GROUT Type: **Neat Cement** Interval: **0-197' bgs** SEAL Type: **Bentonite** Interval: **197-202' bgs** SANDPACK Type: **35-45 10WS** Interval: **202-217' bgs** SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **205-215' bgs**	2035
40		5	CL-CH					2030
45								2025
50		6			52.5 - 54.5' - bands of fine sand/silt thoughout.			2020
55								2015
60		7			2" siltstone band, fractured, light gray.			2010
65								2005

Date Boring Started:	9/15/20 2:30 pm
Date Boring Completed:	9/17/20 11:40 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-122'
Native Sentinel Butte Formation: 122-220'
Spaer Bed Lignite: 206-214'

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LOG OF WELL MW-24(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2068.2 ft	Top of Casing Elev.:	2071.0 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 634,449.4 ft E 1,675,151.4 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	220.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
65			CL-SC		SANDY LEAN CLAY TO CLAYEY SAND (CL-SC): fine grained; dark gray 10YR 4/1; moist; low plasticity; 50% sand, 50% fines.	Mine Spoils	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3'	2000
70		8	CH		FAT CLAY (CH): dark gray and brown 10YR 4/1 - 4/3; moist; firm; little fine gravel, trace orange oxidized staining; high plasticity; 15% gravel, 85% fines.		RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 205' to surface + 2.5'	1995
75							GROUT Type: Neat Cement Interval: 0-197' bgs	
80		9					SEAL Type: Bentonite Interval: 197-202' bgs	1990
85							SANDPACK Type: 35-45 10WS Interval: 202-217' bgs	
90		10					SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 205-215' bgs	1985
								1980
95			CH		FAT CLAY (CH): dark gray 10YR 4/1; moist; firm to hard; few fine gravel; 10% gravel, 90% fines.			1975

Date Boring Started:	9/15/20 2:30 pm
Date Boring Completed:	9/17/20 11:40 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-122'
Native Sentinel Butte Formation: 122-220'
Spaer Bed Lignite: 206-214'

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LOG OF WELL MW-24(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2068.2 ft	Top of Casing Elev.:	2071.0 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 634,449.4 ft E 1,675,151.4 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	220.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
100		11			FAT CLAY (CH): dark gray 10YR 4/1; moist; firm to hard; few fine gravel; 10% gravel, 90% fines. *(continued)*	Mine Spoils	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3' RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 205' to surface + 2.5' GROUT Type: Neat Cement Interval: 0-197' bgs SEAL Type: Bentonite Interval: 197-202' bgs SANDPACK Type: 35-45 10WS Interval: 202-217' bgs SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 205-215' bgs	1970
105		12	CH					1965
110		13						1960
					LIGNITE: black; wet to saturated; soft; weathered.			
		14	CL-CH		LEAN TO FAT CLAY WITH LIGNITE (CL-CH): gray to black; moist; firm; 30% lignite, weathered.			1955
115			CH		FAT CLAY (CH): gray and brown; moist; firm to hard; few fine gravel; 10% gravel, 90% fines.			
120		15						1950
					END OF MINE SPOILS - LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; dry to moist; hard; fractured; medium to high plasticity; 1" lignite band at 127'.	Native Sentinel Butte Formation		1945
125			CL-CH					
130			CL-CH		LEAN TO FAT CLAY (CL-CH): dark greenish gray GLEY1 4/1; dry to moist; hard; fractured with black organic staining on fracture planes; medium to high plasticity.			1940

Date Boring Started:	9/15/20 2:30 pm
Date Boring Completed:	9/17/20 11:40 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-122'
Native Sentinel Butte Formation: 122-220'
Spaer Bed Lignite: 206-214'

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Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2068.2 ft	Top of Casing Elev.: 2071.0 ft
Project No.:	34291096	Drilling Method:	Rotosonic	
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core	
Coordinates:	N 634,449.4 ft E 1,675,151.4 ft	Completion Depth:	220.0 ft	
Datum:	ND State Plane, South Zone, 1927 NAD			

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
130		16	CL-CH		LEAN TO FAT CLAY (CL-CH): dark greenish gray GLEY1 4/1; dry to moist; hard; fractured with black organic staining on fracture planes; medium to high plasticity. *(continued)*	Native Sentinel Butte Formation	PRO. CASING Diameter: **6"** Type: **Steel** Interval: **5' to surface + 3'**	1935
135		17	CL-CH		LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; dry to moist; hard; fractured with black organic staining on fracture planes; medium to high plasticity.		RISER CASING Diameter: **2"** Type: **SCH 80 PVC** Interval: **205' to surface + 2.5'**	1930
140							GROUT Type: **Neat Cement** Interval: **0-197' bgs**	
145		18					SEAL Type: **Bentonite** Interval: **197-202' bgs**	1925
150			CL-ML		LEAN CLAY TO SILT WITH FINE SAND (CL-ML): greenish gray GLEY1 5/1; moist; hard; low plasticity; 15% sand, 85% fines.		SANDPACK Type: **35-45 10WS** Interval: **202-217' bgs**	1920
					MUDSTONE: light gray 10YR 7/1; fractured.		SCREEN Diameter: **2" (#10)** Type: **SCH 80 PVC** Interval: **205-215' bgs**	
155		19	CL-CH		LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; moist; hard; thin fine sand lenses throughout; medium to high plasticity.			1915
								1910
160					MUDSTONE: light gray 10YR 7/1; fractured.			
			CL-CH		LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; moist; hard; medium to high plasticity; 1" lignite band at 162.9'.			

Date Boring Started:	9/15/20 2:30 pm
Date Boring Completed:	9/17/20 11:40 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-122'
Native Sentinel Butte Formation: 122-220'
Spaer Bed Lignite: 206-214'

Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503
Telephone: 701-255-5460

LOG OF WELL MW-24(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2068.2 ft	Top of Casing Elev.:	2071.0 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 634,449.4 ft E 1,675,151.4 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	220.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
165		20	CL-CH		LEAN TO FAT CLAY (CL-CH): greenish gray GLEY1 6/1; moist; hard; medium to high plasticity.	Native Sentinel Butte Formation	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3'	1905
			CL-CH		LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; moist; hard; medium to high plasticity; 1" lignite band at 166' and 168'.			
170		21					RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 205' to surface + 2.5'	1900
					LEAN TO FAT CLAY (CL-CH): dark gray to greenish gray; moist; hard; medium to high plasticity.		GROUT Type: Neat Cement Interval: 0-197' bgs	1895
175		22					SEAL Type: Bentonite Interval: 197-202' bgs	
180			CL-CH		182-193' - lenses of fine to medium sand throughout.		SANDPACK Type: 35-45 10WS Interval: 202-217' bgs	1890
185		23					SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 205-215' bgs	1885
190								1880
195			SC-SM		CLAYEY TO SILTY SAND (SC-SM): fine grained; dark gray; moist; hard; fractured; 65% sand, 35% fines.			1875

Date Boring Started:	9/15/20 2:30 pm
Date Boring Completed:	9/17/20 11:40 am
Logged By:	MLJ2
Drilling Contractor:	Cascade
Drill Rig:	Rotosonic

Remarks: Mine Spoils: 0-122'
Native Sentinel Butte Formation: 122-220'
Spaer Bed Lignite: 206-214'

Additional data may have been collected in the field which is not included on this log.

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LOG OF WELL MW-24(S)

Project:	BEPC AVS Landfill Expansion	Surface Elevation:	2068.2 ft	Top of Casing Elev.:	2071.0 ft
Project No.:	34291096	Drilling Method:	Rotosonic		
Location:	Antelope Valley Station, Beulah, ND	Sampling Method:	Rotosonic Core		
Coordinates:	N 634,449.4 ft E 1,675,151.4 ft				
Datum:	ND State Plane, South Zone, 1927 NAD	Completion Depth:	220.0 ft		

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	MAJOR UNIT	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
195					CLAYEY TO SILTY SAND (SC-SM): fine grained; dark gray; moist; hard; fractured; 65% sand, 35% fines. *(continued)*	Native Sentinel Butte Formation	PRO. CASING Diameter: 6" Type: Steel Interval: 5' to surface + 3'	1870
200		24	SC-SM				RISER CASING Diameter: 2" Type: SCH 80 PVC Interval: 205' to surface + 2.5'	1865
205					LIGNITE: Spaer Bed; black to very dark brown 10YR 2/1 - 2/2; dry; fractured, crumbly.	Spaer Bed Lignite	GROUT Type: Neat Cement Interval: 0-197' bgs SEAL Type: Bentonite Interval: 197-202' bgs	1860
210		25					SANDPACK Type: 35-45 10WS Interval: 202-217' bgs	1855
215		26	SM		SILTY SAND (SM): fine grained; greenish gray GLEY1 5/1; moist; hard; 70% sand, 30% fines.	Native Sentinel Butte Formation	SCREEN Diameter: 2" (#10) Type: SCH 80 PVC Interval: 205-215' bgs	1850
220					End of well 220.0 feet			1845
225								

Date Boring Started: 9/15/20 2:30 pm
Date Boring Completed: 9/17/20 11:40 am
Logged By: MLJ2
Drilling Contractor: Cascade
Drill Rig: Rotosonic

Remarks: Mine Spoils: 0-122'
Native Sentinel Butte Formation: 122-220'
Spaer Bed Lignite: 206-214'

Additional data may have been collected in the field which is not included on this log.

Attachment C

Input Data Files for Calculation of Upper and Lower Prediction Limits

Attachment C
Input Data Files for Calcualtion of Upper and Lower Prediciton Limits
Background Wells: MW-18(S) and MW-19(S)
Antelope Valley Station - Beulah, ND

Event	Well ID	Sample Date	Sample Type	Sample Name	Boron	D_Boron	Calcium	D_Calcium	Chloride	D_Chloride	Fluoride	D_Fluoride	pH	D_pH	Sulfate	D_Sulfate	TDS	D_TDS
2016_07_July	MW-18(S)	7/13/2016	N	MW-18(S)-071316	0.11	1	12	1	5.6	1	1.2	1	9.97	1	370	1	1600	1
2017_02_Feb	MW-18(S)	2/24/2017	N	MW-18(S)-022417	0.2	0	21	1	30	0	5	0	9.85	1	330	1	1100	1
2017_03_Mar	MW-18(S)	3/21/2017	N	MW-18(S)-032117	0.2	0	21	1	15	0	2.5	0	9.34	1	360	1	1400	1
2017_04_Apr	MW-18(S)	4/20/2017	N	MW-18(S)-042017	0.2	0	13	1	15	0	2.5	0	10.03	1	390	1	1400	1
2017_05_May	MW-18(S)	5/23/2017	N	MW-18(S)-052317	0.2	0	12	1	5.4	1	1.7	1	8.86	1	350	1	1400	1
2017_06_Jun	MW-18(S)	6/28/2017	N	MW-18(S)-062817	0.2	0	12	1					9.1	1			1300	1
2017_07_Jul	MW-18(S)	7/24/2017	N	MW-18(S)-072417	0.2	0	12	1					8.91	1			1400	1
2017_08_Aug	MW-18(S)	8/17/2017	N	MW-18(S)-081717	0.2	0	9.7	1	5.4	1	1.8	1	8.92	1	370	1	1300	1
2017_10_Oct	MW-18(S)	10/10/2017	N	MW-18(S)-101017					5.6	1	1.6	1	9.05	1	360	1		
2017_10_Oct	MW-18(S)	10/12/2017	N	MW-18(S)-101217					5.8	1	1.9	1	9.14	1	360	1		
2018_04_Apr	MW-18(S)	4/25/2018	N	MW-18(S)-042518	0.14	1	10	1	7	1	2	1	9	1	320	1	1200	1
2018_10_Oct	MW-18(S)	10/10/2018	N	MW-18(S)_101018	0.136	1	8.6	1	6.8	1	1.85	1	9.35	1	319	1	1510	1
2019_05_May	MW-18(S)	5/21/2019	N	MW-18(S)-052119	0.136	1	9.85	1	7.99	1	2.06	1	8.89	1	282	1	1210	1
2019_10_Oct	MW-18(S)	10/16/2019	N	MW-18(S)-101619	0.127	1	9.56	1	6.31	1	1.6	1	9.33	1	263	1	1230	1
2020_06_June	MW-18(S)	6/11/2020	N	MW-18(S)_061120	0.118	1	13	1	4.94	1	1.29	1	9.95	1	346	1		
2020_10_Oct	MW-18(S)	10/28/2020	N	MW18 (5)_102820	0.12	1	5.93	1	4.65	1	1.28	1	9.11	1	356	1	1670	1
2016_07_July	MW-19(S)	7/13/2016	N	MW-19(S)-071316	0.11	1	13	1	12	1	0.5	1	7.93	1	680	1	1900	1
2017_02_Feb	MW-19(S)	2/2/2017	N	MW-19(S)-020217	0.2	0	5.4	1	12	1	0.58	1	7.8	1	670	1	2000	1
2017_02_Feb	MW-19(S)	2/24/2017	N	MW-19(S)-022417	0.2	0	5.5	1	12	1	0.56	1	7.73	1	700	1	2000	1
2017_03_Mar	MW-19(S)	3/21/2017	N	MW-19(S)-032117	0.2	0	6.9	1	15	0	2.5	0	7.77	1	690	1	1900	1
2017_04_Apr	MW-19(S)	4/20/2017	N	MW-19(S)-042017	0.2	0	5.9	1	15	0	2.5	0	8.8	1	630	1	2000	1
2017_05_May	MW-19(S)	5/23/2017	N	MW-19(S)-052317	0.2	0	5.6	1	11	1	0.51	1	7.61	1	630	1	2000	1
2017_06_Jun	MW-19(S)	6/28/2017	N	MW-19(S)-062817	0.2	0	5.7	1					7.59	1			1900	1
2017_07_Jul	MW-19(S)	7/24/2017	N	MW-19(S)-072417	0.2	0	5	1					7.33	1			1900	1
2017_08_Aug	MW-19(S)	8/17/2017	N	MW-19(S)-081717	0.2	0	4.9	1	12	1	0.64	1	7.4	1	620	1	1800	1
2017_10_Oct	MW-19(S)	10/10/2017	N	MW-19(S)-101017					12	1	0.56	1	7.73	1	660	1		
2017_10_Oct	MW-19(S)	10/12/2017	N	MW-19(S)-101217					12	1	0.65	1	7.8	1	670	1		
2018_04_Apr	MW-19(S)	4/25/2018	N	MW-19(S)-042518	0.16	1	4.6	1	12	1	0.63	1	8.05	1	660	1	2000	1
2018_10_Oct	MW-19(S)	10/10/2018	N	MW-19(S)_101018	0.154	1	4.34	1	12.7	1	0.56	1	8.63	1	669	1	2010	1
2019_05_May	MW-19(S)	5/21/2019	N	MW-19(S)-052119	0.147	1	4.02	1	13.1	1	0.605	1	7.38	1	683	1	2110	1
2019_10_Oct	MW-19(S)	10/16/2019	N	MW-19(S)-101619	0.144	1	3.97	1	12.7	1	0.532	1	8.37	1	666	1	2020	1
2020_06_June	MW-19(S)	6/11/2020	N	MW-19(S)_061120	0.142	1	3.94	1	10.6	1	0.559	1	7.95	1	642	1	1990	1
2020_10_Oct	MW-19(S)	10/28/2020	N	MW19 (6)_102820	0.155	1	4.48	1	11.3	1	0.588	1	7.8	1	707	1	2190	1